

T R E A T I S E
ON
FRIENDLY SOCIETIES.

CONTAINING

An Exposition of the True Law of Sickness,

WITH

RULES AND TABLES,

AND

Remarks on the Extension of Industrial Life Assurance,
and on the Principles involved in the Valuation of Post Obits,
Reversions, and the
Liabilities of Friendly and other Assurance Societies.

BY

ARTHUR SCRATCHLEY, M.A., F.R.A.S.,

*Formerly Fellow and Sadlerian Lecturer of Queens' College, Cambridge;
Member of the Royal Commission of Belgium on Statistics and Administrative Finance; One of the
Actuaries authorised to certify Friendly Societies; One of the Examiners (1850 and 1851) of the
Institute of Actuaries of Great Britain and Ireland;
Actuary to the Western Life Assurance Society, &c.*

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NOTICE TO TENTH EDITION.

THE passing of the recent amending Act (21 and 22 Vict., c. 101), being the 18th of Friendly Society legislation, necessitates another Edition of this Treatise. The opportunity has been taken to insert a variety of new matter, relating to several subjects of importance, as follows :

- 1.—THE TRUE LAW OF SICKNESS or Inability to Labour prevailing among MEMBERS OF FRIENDLY SOCIETIES.
(See p. 106—109, and Mathematical Appendix.)
- 2.—Deposit Tables for Savings Banks. (p. 145—160.)
- 3.—Observations on the Principles involved in *Valuations of the Affairs of Assurance Offices, and on Errors in Bonus Allotments*. (See Preliminary Remarks and Mathematical Appendix.)
- 4.—*On the Distinction between Moral and Mathematical Expectation in Probabilities*. (Appendix.)
- 5.—On the Valuation of Post Obits and Reversions
(Appendix.)

ERRATA.

Division III.

- P. xxxv. art. xxviii, line 10, for "45," read "50."
P. xxxvi, line 1 - - - - for "65," read "70."
 ,, line 2 - - - - for "44," read "45."
P. 63 and 64 - - - - dele the asterisk in the numbering of the pages.
Appx. p. 46, line 21 - - for "*numbers*," read "*members*."

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PRELIMINARY REMARKS.

I.—The title of this Division (III.) indicates that it treats of two kindred subjects—*Friendly Societies* and *Industrial Assurance Societies*,—including under these designations the associations usually denominated Benefit and Odd Fellow Clubs. In this edition we have thought it desirable to review the various methods of Life Assurance in practice at the present time, while suggesting some *improvements that appear to have reasonable arguments for their adoption.—In that portion of the treatise which bears more particularly on Friendly Societies, we have supplied a model collection of rules suited for establishing them on a sound basis. We recommend the following general suggestions to persons engaged in the formation of new societies:—

General Suggestions.

1^o.—No member of a Friendly Society should be allowed to insure for a larger sickness allowance per week than would equal *two-thirds* at most of his weekly earnings. A member has, otherwise, no interest in returning to his work, and retiring from the sick list. A declaration should also be required, stating whether he has effected sick assurances in any other Benefit Society.

2^o.—The subscriptions of Honorary Members should be applied, partly to assist the fund for expenses, and partly to enable the society to offer an incentive to 'Benefit-members' to keep off the sick fund, by according them, out of the honorary fund, an allowance towards diminishing quinquennially their payments in proportion to the length of time that they have previously not been claimants.

3^o.—The aggregate amount of *Sickness allowance* receivable by

* [See Part V. of Division I., or the *Treatise on Savings Banks*, for a plan for extending the operations of Life Assurance Societies and Friendly Societies, by the agency of Savings Banks, and for the establishment of a Government Life Office.]

any one person should be limited, but the members might have the privilege of re-entry, at the rates for their advanced ages.

4^o.—The rate of sickness allowance might increase with the number of years the member has not been a claimant.

5^o.—The *Widows' annuities* should be proportioned to the number of years' membership of the husband before death.

6^o.—In respect to Superannuation Allowances, we would remark that, unless Benefit Societies be placed under better management than, in the majority of instances, is at present the case, or indeed, unless they be constituted *Parish Friendly Societies*, as we have advocated in Art. 87, the members run considerable risk of never receiving the provisions for old age or chronic sickness, for which they have subscribed. It is an open question, however, as to how the superannuation allowances should be secured. Many advocate that they should be made a distinct matter from temporary or *Recoverable inability to labour*. (See p. 99.) We are inclined to think that it would be well if the ordinary tables were calculated to provide only for this latter risk; and that those members, who desire to have superannuation allowances, —that is, annuities to begin at a fixed age, or earlier in case of Irrecoverable chronic sickness—should pay for such additional benefits according to a distinct table: arrangements, in the case of small societies, being made for their underwriting such special benefits, either with the Government, or some stronger association that has a sufficient number of like cases to enable it to undertake the risk. *

7^o.—*As to Arbitration*.—The rules should distinctly state the manner of settling disputes, for which the following clause may be adopted:—

“ If any dispute shall arise between any member, or person

[* In reference to this, the reader should peruse the admirable Lecture recently delivered by the learned Registrar, Mr. Tidd Pratt, which contains suggestions to promoters and managers of Friendly Societies that are entitled to the greatest weight, as being the result of long experience in the discharge of his onerous duties. Many also of great value will be found in the writings and lectures of Sir John S. Forbes, Bart., of Fettercairn, and the Rev. J. B. Owen, M.A., of London.]

claiming under or on account of any member, or under the rules of the society, and the trustees, treasurer, or other officers of the society, or the committee thereof, it shall be referred to arbitration. In each case of dispute the complaining party, or some one appointed by him or her, shall name one arbitrator; and the secretary shall, on the part of the society, name another; and the two shall be the arbitrators to decide the matter in difference. If they agree in making an award their decision shall be final. In case they disagree, they shall make a statement in writing of the facts of the case, so far as they have been brought to their knowledge, or each arbitrator may make his own statement, and such statement or statements, shall be submitted to the Registrar of Friendly Societies in England for the time being, for his award thereon, and his decision shall, in such case, be final." (*See also p. 112.*)

8°.—*As to Periodical Investigations and Dissolutions.*—The affairs of every Friendly Society should be investigated at intervals of three or five years, so that the sufficiency of the rates, and the good working of the rules, may be tested from time to time. (*See page 89.*)

In case a dissolution should be deemed advisable or necessary, it can be effected 'by consent' or compulsorily:—the first, under s. 13 of the Act of 1855, requires the consent of 5-6ths of the members (see p. 46, appx.); the second is applicable in case the Society should be deemed insolvent, when, under s. 8 of the Act of 1858, an application from 1-4th of the members for an Actuary's award of dissolution alone is necessary. Another course may be adopted, *viz.*, union with some more prosperous Society, under s. 14 of the Act of 1855.

II.—*The following Arrangements would go far to ensure adequate supervision:—*

1.—A central committee, consisting of men of experience, to be formed in the leading town, to whom should be confided the chief management of the society, the investment of its funds, and the determination, from time to time, of the risks to be incurred, claims to be discharged, &c.

2.—A sub-committee to be appointed in each district, for the purpose of administering the benefits of the society, exercising surveillance for the prevention of fraud (such as feigned prolongation of sickness, &c.), and the rejection of any persons not suited to become members of the society from their habits of life, state of health, morals, or otherwise.

3.—The sub-committee to consist of Benefit members, presided over by the clergyman of the parish, or some person of equal repute. The whole or part of the sub-committee might be elected, or, at least, nominated by the benefit members of the district.

4.—The sub-committee to superintend the receipt of the subscriptions of the local members, and to remit them (weekly) to the head quarters of the central committee of management.

5.—The risks insured in the branches under each class of benefits to be aggregated together, so as to afford one average risk for the whole society;—the subscriptions being paid into, and the losses being paid out of, separate funds for each class, as provided by the Act 18 and 19 Vic., c. 63, s. 25.

III.—Numerous collateral advantages, which it is unnecessary to enlarge upon in this place, would accrue from the system of central supervision we recommend. It would check any want of firmness, on the part of the local committee or agents, arising from the circumstance of their being tradesmen with whom the members deal.

An objection is made, "That the great extent of such societies would prevent adequate supervision and tend to the undue increase of claims." We think, on the contrary, that it furnishes the main element of security. It is only by a large average, that aberrations in one district, in excess of the calculated laws of mortality or sickness, can be expected to be counterbalanced by diminutions of loss in other districts. If each district bore its own risk, and they were not thrown into a common average, one branch might be insolvent, whilst another might be prosperous beyond expectation. The necessity of continuous investment (the scope for which has been very much extended by the recent Acts) affords an additional reason

why societies should be large enough to invest their surplus receipts without delay, and at the same time on advantageous terms, through being able to procure the best financial advice.

IV.—*As to Audit of Friendly Societies.*—The accounts of a benefit society can only be audited by persons of experience, and it frequently happens that they present as many points of difficulty, and give as much trouble as the accounts of a large office. In any future legislation on the subject, therefore, it should be provided that every society registered under the Act should appoint an Auditor, being a professional Accountant, and enrol his name with the Registrar of Friendly Societies.

V.—*As to a Permanent Guarantee Fund.*—In reference to the clauses (see p. 81) proposed in 1854, at our request, by Mr. Seymour Fitzgerald, M.P., we would remark that the managers of Benefit Societies too much neglect to set apart a sufficient sum to form a Permanent Guarantee Fund. This fund (even in a large society), if not permanent, should, at all events, be established on such a principle, that it would exist till after the probable average lifetime of the younger members of the society, that is, some forty years. In the majority of existing Benefit Societies of many years standing, those members, who entered young and are now become old, find the funds exhausted (as in the case of the Mutual Society in Threadneedle-street,) by the payments which have been made to the members, who have gone before them and were older than they were at the time the societies were founded. In the case of any society, established in the present day, the promoters would undertake a certain amount of moral responsibility; and its failure would produce infinitely more mischief, and so do more to check provident habits amongst the industrious classes at large (apart from the monetary loss to its members) than the bankruptcy of a thousand of the ordinary benefit clubs. In such a society, therefore, a Guarantee fund is absolutely necessary, and should at first consist of the contributions of honorary members, invested and set apart for the purpose. Even should subsequent periodical investigation

into the affairs of the association show, during the first twenty or thirty years, that it is experiencing less losses than were anticipated by the tables, still fluctuations and aberrations may occur, and a permanent guarantee fund should be kept up.

VI.—It is worthy of notice by all who desire—"to relieve the physical wants and necessities of persons in poor circumstances, or to improve the *dwellings of the labouring classes," &c.,—that under the 11th section of the Friendly Societies Act, 1855, societies for such purposes may be registered, when the following privileges and regulations will be extended to them:—

1. Buildings for holding their meetings may be purchased or leased, (sec. 16.)
2. The appointment of trustees by the members, and registration of such appointment, the treasurer to be trustee, should no other be elected, (sec. 17.)
3. The property of the society to be vested in the trustees without assignment, (sec. 18.)
4. The trustees for the time being may sue and be sued in the name of the society, (sec. 19.)
5. Trustees not to be liable to make up any deficiency in the funds, (sec. 20.)
6. The treasurer to give security for the due performance of his duties, (sec. 21.)
7. The treasurer to render accounts to the trustees when called upon, (sec. 22.)
8. Embezzlement or Fraud may be punished by summary process, (sec. 24.)
9. The rules to be conclusive as to the manner of determining disputes, (sec. 40.)
10. Disputes (when not provided for in the rules) to be settled in the County Court, (sec. 41.)
11. The order of the Court may be enforced by a pecuniary penalty, (sec. 42.)
12. The Lord Chancellor may make orders to regulate the proceedings, so as to render them as summary and as inexpensive as conveniently may be, (sec. 43.)

* [In the Appendix to Div. I, or the Treatise on Savings Banks, will be found a full inquiry into the question of the Improvement of Industrial Dwellings. See also Part II of Div. II, or the Treatise on Building Societies.]

AS TO
INDUSTRIAL LIFE ASSURANCE SOCIETIES.

I.—WITH regard to *Assurance Societies*, much has been said as to the injurious effect of so many having been formed of late years, when so few really transact any large amount of business. But the mischief, if any, is confined to those societies, the non-success of which is attributable to their having been founded, either without a good connection, or with insufficient paid-up capital to defray the expenses, that are necessary to establish properly any institution of importance. All persons, whose opinions on assurance matters are worth noticing, are agreed that the field for business, as yet unworked, is so vast and increasing as practically to leave room for many more companies than now exist; allowance being made for the great number that have lately amalgamated; the more so, as scarcely any of those in operation seek to do business with the *Industrious classes* or the smaller kind of tradesmen. Moreover, it is to be remembered that not only are the numbers of the population at large yearly increasing, but the materials for assurance are themselves gradually changing, and will do so as long as the world lasts; for each year new lives are born; new lives come of age; new lives have commercial transactions, or marry, and require policies of assurance.

II.—That altogether scarcely a quarter of a million of persons should have been assured in the United Kingdom,

—when the population is at the present time near 30 millions, and is increasing at the rate of more *than 250,000 lives a year—is conclusive evidence, either that the public do not yet fully understand the advantages arising from the assurance system, or that the majority of existing companies, from the manner in which they conduct their business, do not meet the practical requirements of the people.†

A great, though gradual, increase is, however, noticeable in the number of persons assured during the last 10 years, more particularly by those institutions which are usually denominated class offices; and this increase leads naturally to the expectation, that tens of thousands, before long, will avail themselves of life assurance, where hundreds only do so at present. We concur, also, with an opinion, recently expressed, that there are many class interests, as yet not addressed, which future class offices will succeed in enlisting on the side of the assurance principle.

III.—*As to the prosperity of Assurance Offices.*—The position of the majority of existing Assurance societies is, indeed, satisfactory, if they be regarded only in their character as *commercial associations*. It is certain that they have met with unexampled prosperity from the precaution, which has been exercised, of charging a considerable margin in favour of the society over the mathematical value of the risk attending the assurance of any life, and from the profitable and judicious manner in which the premiums, in general, are invested. Hence it has followed as the result of the experience of upwards of a century and a-half, that no commercial undertaking has surpassed a soundly constituted assurance office in the steadiness with which its prosperity and consequent profit have increased, where judgment and care have been exercised in the management.

* See further on as to the numbers of the population, (art. xxxiv-xxxvii.)

† [See Arts. 11 and 12. p. 14, on the practical and legal impediments to Assurance.]

This may be regarded, not as the result of accident, but as verifying the exactness of the limits, within which events may be estimated by the Laws of "Average," as likely to occur. In fact, the remarkable manner, in which the happening of such events has coincided with the calculated probability of their occurrence, has proved that there is less tendency to fluctuation in the profits of an assurance society than in those of any other commercial enterprise.

IV.—Such is the *commercial* aspect of the better class of offices; but if they be measured by the extent of good they have done to the community at large, or by the number of families, whose pecuniary difficulties or suffering they have contributed to alleviate, then (remembering the millions, in the United Kingdom alone, who have lived and died since an assurance office was first founded) it must be acknowledged that the number of persons, who have been benefited, is limited indeed, and that *hundreds* only have been assisted where *tens of thousands* have suffered. Hence so far from there being ground for no greater exertion being made to extend the operations of assurance companies—so far from there being any reason that the public should rest satisfied with the activity of the majority of existing associations—it must be acknowledged, that they have failed to a considerable extent in their mission.

The fact is, the managers of insurance companies, in the greater part of their publications in support of life assurance, have addressed their efforts mainly to making an impression upon the minds of the middle and higher classes, and even there they have only partially succeeded in their object. The humble operatives, whose circumstances are more precarious, have not been addressed with the same anxiety to produce conviction. To make life assurance universal, there must first be removed, as far as the principle of the system will allow, many imperfections in the practice upon which it is applied. Societies

must cease to consider that the industrial portion of the community are, as a matter of course, to leave their children without any provision. They must induce the hardworking mechanic, the small tradesman, and others in a similar position, to give the subject more careful consideration, as one coming home to themselves, and affording benefits within the reach of their narrow resources.

V.—*As to the failure of Assurance Offices.*—Although, as a whole, so many assurance societies appear at present to have been successful, and although it is undoubtedly true that the principle of Life Assurance is still very far from having received all the extension of which it is capable, yet the experience of the last few years has strikingly shown, that a large number of offices have not been able to do sufficient business to pay expenses or to form Averages of lives. This is confirmed by the fact, that in the three years, 1856 to 1858, 88 offices have ceased to exist, 5 have amalgamated, 69 have transferred their business, and 20 have had recourse to a winding up in the Court of Chancery.—(*v. that useful Annual the Post Magazine Almanack.*)

VI.—Now, in order that a Life Assurance Society may be successful,—that is, may fulfil its promise of paying to the representatives of every life, on decease, the amount of the policy without drawing from any other fund than the premiums received from assurers and the interest obtained on the same,—various circumstances, it is evident, must concur.* These are:—

(1.) That the premiums of each member be sufficient to pay his share of the expenses of the Institution, after setting aside the amount required to be accumulated according to the law of mortality.

* [On this head the reader should consult the writings of Messrs. Peter Hardy, F.R.S., Samuel Brown, Sprague, &c., which bear the stamp of refined judgment confirmed by experience.]

(2.) That the law of mortality shall accurately represent—or, at least, not exaggerate—the probable future existence of the lives assured.

(3.) That there be a sufficient number of Assurers in the Society to form an Average, and ensure the proper distribution of risks.

(4.) That the premiums be invested on such securities as shall produce at least an equal amount of interest to that involved in the tables, without danger of loss from depreciation in value when they come to be realized.

VII.—*As to the Causes of Failure.*—The preceding remarks shew, that it is not sufficient for an Assurance Society, during the early years of its existence, to pay its way—that is to say, merely be able to meet current claims by death, and expenses, or even unforeseen contingencies:—it is, also, necessary that a sufficient portion of its Premium Income should be set aside to accumulate* for the claims that are certain to arise in the future. The want of such accumulation has caused the insolvency of several old Assurance Companies, (recently made known), and would be attended with fatal results in a Mutual Society, where there are no proprietors to fall back upon, as there were in the instances referred to.

Life Assurance differs from other classes of risk in this circumstance:—that, sooner or later, all the assured must die; and with each year, the time is brought nearer when their claims will have to be paid.

VIII.—*As to the Equitable Society.*—The anticipations and arguments in favour of probable prosperity in modern Assurance Offices are generally deduced from that of the

* [Directors of Companies too often forget, that it is only by such a process of accumulation at compound interest, that a small annual payment of £2. 4s. 8d. at age 30 can be made to pay £100 at death.—See page 51.]

“Equitable Society,” under mistaken views of the causes that operated in its favour, which it may be advantageous to consider.

In the year 1762, when the Equitable Society was first established, (says a writer, who appears to be familiar with the history of that Institution), it was considered necessary by its projectors, so limited was their knowledge of the subject, to graduate the premiums on a very expensive scale. The Equitable Society was, in truth, the first institution for Life Assurance which attempted, what was then considered, the dangerous novelty of graduating its premiums according to the ages of the insured. It was, therefore, natural, that those, who were trying a new experiment for the first time, should endeavour to guard against the danger, which might arise to the infant institution from too great a degree of liberality in its charges; and we cannot, at the present time, sufficiently admire the prudence of that determination. It was a good example, but indifferently followed by its many successors.

The table of mortality, from which the early premiums of the Equitable Society were deduced, was one formed from the mortality returns of the city of London, during a period when that mortality was nearly equal to what it had been during the continuance of the plague. In consequence of these very high premiums, and of other circumstances hereafter to be adverted to, the Society prospered so greatly in its pecuniary affairs that in the year 1781, on the advice of Dr. Price, it was thought safe to reduce its rates. On this occasion the now well-known table of mortality, called the Northampton Table, was adopted; but even then, with a safety charge in addition thereto of £15 per cent. In the year 1785 this latter charge was finally removed, and the Northampton Table, with a computation of interest at the rate of £3 per cent per annum has, since that time, been the standard table of the Equitable Society.

The success met with by this Society, and the wealth it realized, led many to suppose that its prosperity was mainly to be attributed to the excess of its premium charges. In reality, however, it was due to a combination of circumstances, which it is extremely improbable will ever occur again. One of the most important is the increase, which the value of its funded property received from the great advance that some years ago took place in the price of stocks, tending towards doubling the value of the capital of the Society. Much of that capital was realized and invested at a time when £100 Consolidated Stock was purchaseable for less than £60, while the price of the same amount of stock, for some years past, has equalled and exceeded £90.

Another source of very considerable profit to the Equitable Society was the careless abandonment, by the holders, of its early policies; a system which continued to favour the society for many years. During the infancy of Life Assurance, very few policies were effected excepting for temporary purposes, and as soon as the object was answered, the policy was abandoned without any price for its surrender being required, or allowed by the society.

This practice became a fruitful source of profit to the institution, until not many years ago, when assurance societies, under the influence of competition, discovered it to be judicious and right to offer to purchase back policies for which assurers had no longer occasion; so that, at the present time, these securities have become very valuable and find ready purchasers in the market.

IX.—*The Dangers of Life Assurance.*—The author of “Life Assurance, its Schemes and Difficulties,” who furnishes these particulars of the Equitable, further observes that, although public failures amongst societies for life assurance are, comparatively speaking, of rare occurrence, yet the covert bankrupt state of such institutions ought in reality to be more vigilantly

watched for, than the open relinquishment of business. By the latter course assurers are at once placed upon their guard; *but against the undetected poverty of a necessitous institution it is difficult to be on the alert.* The public are not generally aware, that the business of life assurance is so peculiar that a society may, to an inexperienced eye, be apparently in a flourishing condition, and actually adding every year considerable sums to its capital, although *proceeding steadily towards eventual insolvency, no less real, because it does not apparently suspend the progress of the society.*

During a long and improvident infancy, the Directors may have so infringed upon the Premium fund, that, without its being exhausted, it may be insufficient, in the Society's maturity, to provide against the inevitable increase in the number of the claimants through death among the policyholders. Meantime the Assurers continue sinking their premiums in blind security, until, too late, the reality of the case becomes known.

An assurer in a Life Office is, in fact, tied for life to the institution of which he first becomes a member, unless he discover the state of its affairs very speedily; for otherwise he cannot, without considerable loss, recede from the Society; neither can he recover back that youth, health, and activity, he possessed when he first entered it, nor the savings of his life which he finds he has uselessly expended; meantime, age has advanced with him, his health has probably become impaired, and no other Society would receive him, without such a considerable advance in his premiums, as, perhaps, he may be ill able to afford.

X.—The following are the principal *Causes*, capable of remedy, which have brought various Societies to insolvency, and may, unless attended to, lead others to the same fate:—

1. *Excessive expenditure.*
2. *Too low a scale of Premiums.*

3. *Excessive Bonuses.*

As regards the first, but few societies can continue a system of expenditure disproportionate to their income, without soon discovering the error of their ways, and either adopting a more reasonable system or having to make arrangements for the transfer of their business to some other society or for being wound up by the Court. That the expenditure is excessive would, in fact, be found out from the impossibility, after a very few years, of continuing it; hence the loss to the Assurers, or to the Company, cannot be so serious in its character as that attending the other two causes.

The evil produced by *Inadequate rates* is not, indeed, easily detected, as many years may elapse before an actual deficiency in the assets is discovered, unless a valuation be made by some one competent to form a sound opinion on the subject.

Many Boards of Directors are in the habit of dispensing with such valuations, too frequently contenting themselves with estimates made by subordinate officials, naturally ready to have faith in a favourable view of the concern, from which they derive their means of existence.

XI.—*As to Excessive Bonuses.*—The attraction of low rates is resorted to by a few offices for the purpose of obtaining business; and it is among the most injurious held out to the public. To this reduction in the annual premiums, at starting, are not unfrequently added foolish promises of *large Bonuses*. The incompatibility of the two advantages does not deter parties desiring to insure; although, in many instances, it is apparent that the policy-holders can never receive even the amount of their policies, while in others, it is still more evident that the *Bonuses promised can never be realized*.

XII.—To this highly mischievous system, we would urge

the special attention of our readers ; for, under delusive notions of profit, Bonuses are being frequently declared, which neither the experience of the past operations of the society, nor a judicious estimate of the contingencies affecting the future would justify. Indeed estimates of future losses, based on results of past experience and observation, cannot without reserve be relied upon for purposes of profit division.

The Bonus system was begun, not very many years ago, by one or two of the older offices, which, perhaps, had realised profits from a combination of peculiar causes, that do not now exist and are not likely ever again to arise. The plan, being found attractive, was adopted by other societies, sometimes without actual inconvenience ; but, under the influence of unhealthy competition, various respectable offices have taken to declaring bonuses so large as to be obviously not justified by their financial condition, nor consistent with security.

There is no branch of the subject so difficult or so little understood, as that relating to the principles upon which Profits should be estimated and divided. Many even of the so-termed *old* assurance companies are allotting bonuses, not out of the surplus actually realised in the period anterior to the division of the same, but out of the *prospective* profit, assumed as likely to attend the future Income of the society from the policies already effected.

That income (and consequently the *profit margin* in it) is treated as already realised, without regard to the probability of a portion of the policies being discontinued.

We have recently had occasion to examine the affairs of two companies, established more than 30 years ago, and found it necessary to recommend, in each case, the immediate Transfer of the business to some more prosperous society, in consequence of the insufficiency of Assets, caused to a very large extent by the imaginary profits, that had been divided

in* past years. We found that, even though such Transfers would be attended with some sacrifice on the part of the shareholders, it was preferable to the increasing losses to be anticipated in the future.

XIII.—*As to Bonuses.*—The only case, in which the payment of a Bonus to an assurer is really proper or desirable, is where he has paid up in *office* premiums, with interest, the amount of his policy. It is obvious, that the assurer, who dies before he has paid in that amount, can have no right to complain, as he, at least, receives more from the society than he has contributed to it; and if he averred, that the rate of premium charged exceeded the mathematical measurement of the contingency, the answer should be, that such margin is added partly to pay expenses, and partly to form a †fund not only for future contingencies, but, also, as a means of compensating by Bonuses those subscribers, whose payments may eventually exceed the pecuniary benefit they have assured for. There is something absurd in the prevalent system, by which we see, every day, cases of assurers, who, entering a society at an age when they are calculated as likely to live a considerable number of years, are charged in consequence but a small premium of £2 or £3 per cent. yet, on dying prematurely, leave to their families not only the amount of the policy, but a goodly sum in Bonus, out of profits, that have arisen from the subscriptions of other members, and to which they, by dying, cannot by any possibility have a fair claim. A case occurs to our mind of a gentleman, who insured in an office in the month of April 1845, for £500, at an annual premium of £11, and was agreeably astonished to receive a

* See a curious illustration of such errors further on.—Art. xix.

† [*In fact, some portion of the margin is added for the 'moral expectation,' that in each single case the estimate made of the 'mathematical expectation' may prove insufficient.*]—(See chapter in the Appendix on this subject.)

circular in May of the same year, informing him that, by his payment, he had contributed to the profits of the society to such an extent that they were enabled to declare him a bonus of £10. 15s!

An assurance society may have made profits on the aggregate of its transactions without a particular member being in a position to say that he ought to receive a bonus; for if the question be asked, which members are entitled to allowances on account of profit, the answer can only be—those, who, in the greatest degree, have contributed to the prosperity of the association, and have not made it a loser by the contingencies of their own existence.

If things be called by their right names, and the word “profit” be used in its ordinary sense, nothing could be more untrue than that the new member, of the society we have referred to, was entitled to the bonus allotted to him: the true fact was, that his policy having been effected just within the close of the period of a Bonus Division, and a valuation of the society’s affairs, about that time, having probably shewn profits on the aggregate, the new member was presented with a Bonus that previous Assurers had contributed to create. No stronger illustration could be required of the impropriety of the present system; and much would be done to prevent the bankruptcy of Assurance Offices, and to place them on a sound footing, if it were put an end to.

XIV.—To resume, then, when a Valuation, that has been made of the affairs of a society, shows a Balance of Assets over estimated liabilities, the rateable proportion, that belongs to all policies which have not been *paid up*, should be carried to the Guarantee Fund. As soon as such policies have ceased to exist, or have attained the required condition, the reserves which, at various times have been made for them, may be removed from the Guarantee Fund, and made available for division by way of Bonus. Those, that die too soon ought

to be content with their representatives being paid the amount of their assurances: those that live beyond would receive Bonuses out of the reserves in the Guarantee Fund, as a compensation for paying for a longer term.

The above principle is eminently conducive to the *safety* of an assurance office; for all Valuations are but estimates of probabilities of the duration of lives, and although, *mathematically* speaking, from Tables of Mortality, a profit may be shown, yet there is a *moral* chance of loss by aberration, which requires a society to see a large portion of the existence of a group of lives out, before it can actually *pay away* profits. It cannot by anticipation be secured that the majority of them will live up to, or over, the average expected term, or that the present profit may not be neutralized by future loss, as was the case with the two societies referred to in Art. xii.

This plan would practically be, in the long run, more beneficial even to the assurers, as a smaller Guarantee Fund would in the aggregate be required, since the Bonuses on the policies, that have ceased before their time, would merge into the general profits, and be improved with the other investments. The shares of those, who survive, would be very much larger than under the ordinary system of allotment in practice, whether applied in the form of a reversionary sum payable at death, or to the extinction of premium.

In the Mathematical Appendix at the end will be found an outline of various modes, in which Bonuses might be allotted.

XV.—*As to Increasing Bonuses.*—If the plan above recommended were objected to, as deferring too long the gratification of the eager desire of assurers to participate in the profits of a society, we would suggest the following method of apportionment, as about the best to be adopted, *viz* :—To convert the estimated present share of an assurer, in the profit shewn in the balance sheet at any valuation period, into an equivalent *Increasing Reversionary Bonus*, payable at death,

proportioned to the number of years he survive the allotment, instead of a *Fixed* reversionary sum. The calculation would be as easy as in the method at present practised. It would be simply necessary to divide each assurer's share by the value of an increasing assurance of £1, instead of by the value of a fixed assurance of £1. In like manner, if preferred, there might be allotted, instead, an **increasing reduction of premium*, for which the only change in the calculation would be the division by the value of an *increasing annuity due* instead of by the value of a *constant annuity due* of £1. [See the *Appendix for the Formulæ.*]

XVI.—*As to a Valuation of the Affairs of a Society.*—To appreciate thoroughly the error of the Bonus System, it is well to remember that the valuation of the affairs of a Life Assurance Company is but the aggregate of the valuations of each policy. It may be made either in reference to full office premiums, *i.e.*, the premiums actually being paid, or to net premiums.

1. If by *full office* premiums—the result produced will represent the present value of all that will, by the end of life, be obtained by the office from the policy, as compared with the ultimate payment of the amount assured at death.

2. The result of such a valuation will, therefore, contain not only any profit that may have been realized in the past, but will absorb all allowance for future expenses, profits and contingencies, indeed all that can possibly be afterwards realized on the policies, except from circumstances not subject to calculation—that is to say, not involved in the loading on the premium, and which might arise from the lapsing of policies

* [In the Deposit Tables further on, we have given a new Table, by which an assurer is *guaranteed* an increasing Bonus for every year of his life, in the form of an increasing Reduction of Premiums, and of a Deferred Annuity after the premium is extinguished. See p. 159.]

or an unusually high rate of interest obtained on the Society's Investments, &c.

By way of example :

If the present value of the future premiums be shown to be £60,000, and the margin was 20 per cent. on the net premiums at the original ages, then there would be £10,000 not yet realised of any surplus of assets that may be shewn in the balance sheet.

3. As long as a *Division of Profits*, by way of Bonus, is not contemplated, no inconvenience can arise from a valuation by full premiums ; but, if a division be intended,—as it ought only to be of the profits actually realised up to the time of valuation from the *past* payments of the assurers,—the valuation must be so made as to exclude all profit obtainable in after years from their *future* payments.

4. For this purpose, it is simply necessary to ascertain the state of the society's clear undoubted assets remaining, out of the *past payments* and *investments*, at the time of the valuation ; (all claims up to that time having been paid or provided for), and to deduct, therefrom, such proportion of the back premiums as, by the net Tables of Mortality used as the basis, it would be necessary that the society should have in hand, with compound interest thereon, towards the ultimate realization of the policies.

Now this is exactly equal to their values estimated, with regard to the future, by *net* premiums. Hence, a *valuation must be made by net premiums, when it is desired to confine the Division of Bonus to profits arising from the past receipts and investments of the society, up to the date of the valuation.*—(See Appendix).

XVII.—This distinction has, unfortunately, in many cases been overlooked ; and, by the aid of Valuations made on the principle of *full office* premiums, Bonuses have been declared out of supposed profits, which, so far from having been actually

realised, absorb a considerable portion of the margin on the future Income. In so doing, the probable lapsing of the policies is too frequently neglected.—In fact, an investigation of the *past*, alone, shows for what the assurer is creditor on the society. The ceased policies are, thus, no longer represented as claimants on the funds; and the profit or loss that has accrued on them, produces an excess or deficiency in the general assets in hand.

If previous allotments have been made, they would have to be provided for by placing on the liability side of the account an increased proportion of the net value of the policy.

XVIII.—Whatever profits are shown in a Balance sheet, they will have arisen mainly from the following sources:—

1^o. The *margin* or loading charged in the premiums over the net tabular rates.

2^o. The *realization of a higher rate of interest* from the past investments, than was assumed in calculating the tables of premium.

3^o. The *lapsing of the Policies*, or the surrender of them on terms favourable to the office.

4^o. The *selection of lives*, by which the deaths do not usually occur, during the earlier years of a set of assurances, to the extent allowed for in the tables of mortality, which are based on the experience of a mixed community.

Although the valuation by net premiums would diminish the apparently favourable present aspect of the contracts, yet a margin should be found, in the society's funds, available for Bonus reserves, if the past receipts have not been squandered, but solely applied to pay claims not exceeding the originally anticipated extent and a moderate rate of expenditure; provided, of course, that the balance has been duly invested at interest, without delay or other loss on that head.

XIX.—The following is an example, given by an experienced

Actuary, of the fatal results, in a very old office, of treating as realised profits the present value of the margin in the office premiums receivable in the future :—

“In the year 18—, the directors of the society declared a Bonus of some £300,000, no doubt imagining that the state of their finances fully warranted them in doing so: the account of the state, however, was not forthcoming afterwards, when another investigation was made anew under the auspices of regularly appointed Examiners, who reported that the Surplus fund of the society appeared to be only £44,469. 2s. 8d.,

<i>viz.,</i>	Assets . . .	£3,053,069.	8s.	7d.
	Liabilities . . .	£3,008,600.	5s.	11d.

and that the present value, at the second investigation, of the old bonus declared, was no less than £170,529. 4s. 11d,—nearly four times the whole surplus. By the declaration of bonus in 18—, therefore, the members were actually induced to draw upon the subsequent transactions of the society to the extent of £126,060 ! Nor was this all :—the valuation of the Examiners on the second occasion bears internal evidence of containing the whole future profits to be expected from the older policies existing since 18—; and thus the Declaration of Bonus, besides absorbing the whole future profits of the class who were to draw it, made off with an immense sum out of the contributions of expected members and with everything in the shape of guarantee fund. The effect of this on the future affairs of the society is just what might have been anticipated: for we find that, seven years afterwards, the state of matters, according to the report of the same Examiners, stood thus :—

Assets . . .	£3,780,927.	2s.	2d.
Liabilities . . .	£3,765,530.	6s.	1d.
Surplus	£15,396.	16s.	1d.

in which surplus was included the then present value of the whole profits to be expected from the policies current at that date; so that, besides the profit actually received between the two valuations, the entire profits on the transactions current at the latter date, and all previous accumulations, have been absorbed by this Bonus ;—for the trifling surplus of £15,400 may be disregarded. Were the *yet unrealized* profits (dependent on the margin of premiums receivable in the future) to be struck off, a very large Deficit would make its appearance, instead of a surplus of £15,400.

“No one would accuse the manager and directors of this society in 18— of intentional inequity; there can be no doubt that they acted conscientiously according to their ideas and information; yet no one can deny that they committed a very serious error, and that, by holding out this large bonus, they allowed new members to become bound for, and eventually to pay it.”

Another eminent Actuary, Mr. Higham, remarks with humour, that, in offices which estimate future profits as if they were present assets, not only is the want of prudence to be deplored, but also the objectionable tendency of a system, which “attracts customers by the display of an alleged unappropriated surplus,—just as the countryman is led, by the exhibition of what he takes to be a roll of genuine notes, to conclude that he cannot do better than place his watch in the keeping of the owner of such unbounded wealth.”

XX.—The following Table exhibits the extent of the error committed when the premiums paid are represented as creating large profits:—

TABLE,

Showing the amount that a net Annual Premium of £1 will assure *at the death of a person of any given age*; or, the amount to which an Annuity *due* of £1 will accumulate by the end of the year of his death. (3 per cent. interest, English Life Table, No. 2.)

Age.	Amount.	Age.	Amount.	Age.	Amount.	Age.	Amount.
0	£43.901	23	£58.739	46	£29.643	69	£10.430
1	64.304	24	57.316	47	28.578	70	9.899
2	75.119	25	55.904	48	27.530	71	9.391
3	80.976	26	54.505	49	26.499	72	8.906
4	84.408	27	53.119	50	25.484	73	8.444
5	86.263	28	51.745	51	24.486	74	8.003
6	86.735	29	50.385	52	23.502	75	7.584
7	86.157	30	49.037	53	22.533	76	7.186
8	85.152	31	47.704	54	21.577	77	6.809
9	83.719	32	46.385	55	20.635	78	6.451
10	82.042	33	45.081	56	19.704	79	6.113
11	80.082	34	43.792	57	18.794	80	5.794
12	77.959	35	42.519	58	17.928	81	5.493
13	75.831	*36	41.262	59	17.102	82	5.208
14	73.705	37	40.021	60	16.310	83	4.941
15	71.759	38	38.798	61	15.550	84	4.689
16	69.708	39	37.592	62	14.820	85	4.452
17	67.810	40	36.403	63	14.117	86	4.229
18	66.099	41	35.232	64	13.441	87	4.020
19	64.564	42	34.078	65	12.790	88	3.824
20	63.087	43	32.943	66	12.164	89	3.640
21	61.625	44	31.825	67	11.562	90	3.467
22	60.176	45	30.725	68	10.984		

* EXAMPLE.—Suppose a Profit Policy for £1000, to be taken out at age 30, at a Premium of £24. 1s. 8d. a year (Table II., p. 51): then, at age 36, the net Premium, required to meet the risk upon the life, will exceed the full office Premium.

N.B.—The reciprocal of the figures in the above Table is the Net annual premium to assure £1, payable at death.

This Table will, also, serve as a guide to the Free Policy which might be granted instead of a Cash Surrender Value,—

By the following Rule: Multiply the office premium, being paid under the Policy, by the value given in the above Table at the present age of the life, and deduct the result from the amount assured.—Thus, for a *non-profit* Policy of £1000 taken out at age 30, at an annual premium of £22. 6s. 8d., after ten years existence a Free Policy of £187 might be granted: and, on such an assurance, it would *never be safe* to give the privilege which has been held forth by some offices, of a Free Reversionary Policy equal to the amount of premiums paid;—while on a non-profit Policy for £1000 taken out at age 20, at an annual premium of £17. 1s. 8d., it would be in favour of the office if the Policy were dropped at any time after more than 12 or less than 46 years' duration.

XXI.—*As to the Selection of Lives.*—With respect to the *Selection of Lives*, Mr. Milne has justly remarked:—"Although the members, when they first enter, are select lives, they are not, even then, so much better than the common average as many persons suppose; for the more precarious a life is, the stronger is the inducement for parties interested in its continuance to get it assured, so that bad risks are frequently offered and escape detection." Dr. Farr states, that 27 men in 1000, between the ages of 20 and 60, are suffering from some kind of disease or other; and that consumption, the most common fatal disease, lasts on an average two years:—so that selection will only diminish the mortality for the first year, or two, or three, or four, years, subsequent to its exercise, and is of greater value in reference to older lives than to young ones.

XXII.—*Respecting Amalgamations.*—In consequence of a great number of Assurance Companies having been formed, the majority of which never had any chance of doing a sufficiently extensive business to make their operations profitable, a proper desire has, of late, arisen for one society to amalgamate with another; such amalgamations being virtually, however, a transfer of business from the weaker to the stronger. It is to be regretted that, not unfrequently, these

have been sanctioned, without professional assistance, by the directors of purchasing companies, on most improper terms, much exceeding the worth of the business obtained; and crude notions appear to be prevalent, that one or two years' purchase may be given for the income of a Life Office, without regard to the number of years each policy has been in force, or to the sufficiency of the premiums charged for the risk in each case, or, as to whether the lives are of a class to be desired by a respectable society.

XXIII.—The facility, with which amalgamations have hitherto been effected, is too frequently urged as an evidence of the practical security experienced by shareholders of Assurance Offices. For it is argued, that, "Even if we fail in succeeding as we expect to do, there will be no difficulty in transferring our business on advantageous terms to another society." This is undoubtedly true to a very great extent, where the amount of expenses incurred up to the time of sale has not been much disproportioned to the receipts; the reason being, that most companies are anxious to increase the number of their policies, so as to render aberrations from the law of mortality less likely to occur; and it is felt that, while a considerable immediate addition to the number of lives is secured by the purchase, the increased income obtained tends also to diminish the per centage that the expenditure need bear to the receipts of the society.

XXIV.—It is also true, that there are a considerable number of societies, which have been started without any particular class interest or connections to assist them in obtaining business; and, although perhaps conducted with judgment, yet it is certain that each would gain by coalescing with three or four others, and by united strength thus present not only greater probability of stability, but also larger funds for the extension of their operations.

There are, of course, a few societies of high standing to which the addition of the businesses of other companies would scarcely be of importance, from the fact that they already transact large amounts of new assurances; but those cases are few and exceptional.

XXV.—A variety of practical considerations affect the theoretical price that might be offered for a business: one of which is the antecedents of the society to be bought, and the nature of the agencies and connections it can bring over. Discussion of such points, however, would be too long in this place. It may be remarked, nevertheless, that in measuring the goodwill and relative prosperity of an Assurance Office, as shown by business transacted or revenue created, those receipts only should be treated as Income, which arise from whole life and joint life policies on the full-premium system.

Term Policies are not deemed worthy of consideration, as but little profit is found to arise from them. In like manner policies on the half-premium or increasing scales of premium are, afterwards, in too many instances, abandoned when the debt becomes an incumbrance or the increase of premium too heavy.

XXVI.—The only sound way to estimate the position of a society, offered for amalgamation, is to make a regular valuation of the Policies; but this course is too often not adopted, from a desire to avoid the necessary expense of such investigations; yet it is important to know:—

1^o.—What proportion of the past premiums the society should have in hand.

2^o.—How much of the annual income of the society would be required in coming years to meet its existing engagements; and,

3^o.—What is the probable amount of claims, looking to the average age of the lives assured, likely to accrue from and after the year at which the transfer takes place.

XXVII.—As regards the first, the ratio is given in Art. 15, p. 22, Appendix. The following Table may be used for obtaining an approximate valuation of the affairs of a society, by placing the policies in successive groups according to their average standing. An allowance can be made for the probable chance each policy has of lapsing, and of its surrender value being less than the net value given in the Table. It will be noticed that it does not necessarily follow, that a greater number of premiums must be held in hand to provide for a policy on an older life, than is requisite on a younger life.

The purchasers have also to consider that many of the existing assurers of the company, of which they are undertaking the risks, may offer their policies for surrender, and some inconvenience may arise from declining to meet an apparently fair demand. The very offices,—which, by making their valuations on full office premiums, show frequently a margin in the balance sheet, in favour of the society,—at the same time offer in their prospectuses, with regard to all their policies, should the assurers desire it, to give back for their surrender a price out of the past payments. They do not reflect that a contract, to get rid of which money would have to be repaid, cannot, concurrently, be treated as an Asset to the society.

The TABLE shows the Amount a Society should have in hand for every £1 a year of *net* premium received on a life, to meet the ultimate payment of the amount assured, according to the number of years expired since the issue of the Policy : in other words,—

How much of the *net* portion of the past premiums that each assurer has paid, a transferring office should have in hand to place its policies in a proper position with regard to the amalgamated society; Future Expenses and profits being supposed to be contributed out of the margin included in the premiums yet to be paid.

(English Life Law, 3 per cent.)

Age at issue of Policy.	Period of Years expired since issue of Policy.										Age at issue of Policy.
	5	10	15	20	25	30	35	40	45	50	
20	2.73	5.79	9.19	12.95	17.08	21.58	26.52	31.71	36.65	41.28	20
25	2.83	5.98	9.47	13.29	17.46	22.03	26.84	31.41	35.71	39.58	25
30	2.91	6.13	9.66	13.52	17.74	22.19	26.41	30.38	33.95	37.00	30
*35	2.97	6.22	9.78	*13.67	17.77	21.66	25.32	28.61	31.42		35
40	3.00	6.27	9.85	13.62	17.20	20.57	23.60	26.19			40
45	3.01	6.30	9.77	13.07	16.17	18.95	21.33				45
50	3.03	6.22	9.25	12.10	14.66	16.85					50
55	2.93	5.72	8.33	10.69	12.70						55
60	2.56	4.98	7.15	9.00							60
65	2.24	4.26	5.99								65
70	1.90	3.51									70
75	1.53										75

How much less than the above the purchasing company can consent to take, or in other words how much they can allow off it in the nature of goodwill for Agencies, &c., is a matter that can only be measured according to the circumstances of each case: *but strict inquiry should be made as to what Bonuses have been allotted or Reductions in premiums granted.*

* EXAMPLE.—If £12 a year be the office premium on a Profit Policy for £490 (see Table, Art. XX.) effected at age 30, of which £10 is the net premium; then, when it has been 20 years in existence, the society must have £136. 14s. in hand, out of the £240 received, towards meeting the original sum assured, exclusive of any Bonuses that may have been allotted.

XXVIII.—*As to Annual Income required to meet Engagements.*—In respect to the second point, in Art. XXVI, the following Table, calculated on the English Life Law of Mortality, will enable an estimate to be obtained. For example, if the present average age be * 40, and the total amount assured be a million on 1000 lives—then £13,000 will be the amount that may be expected to be claimed for deaths in the year following; £13,000 in the second year and so on; assuming the transferred policies to be kept up. Again, if the average age be older, 45, but a lesser amount £861,000 be assured, then £81,000 are the claims that may be expected in the following five years, of which £17,000 will be in the fifth year, and so on, and in like proportion if the amount assured be more or less.

The increase in the amount of claims with advancing years,

has to be attended to. Thus at 65 the claims would be £28,000, double what they were at 44.

DECREMENT TABLE, *showing the Amount of Claims, that may be expected out of £1,000,000 assured at average age 40, and similarly for the amounts set down at older ages, supposing them to represent the average age of a society, and assuming all the Policies to be kept up.*

Age.	Number likely to die in the PERIOD out of 1000 lives.	Number likely to die in the YEAR.	Sums to be paid for Claims during the YEAR.	Sums to be paid for Claims in the PERIOD.	Sums remaining Assured.	Requisite Income, from surviving Lives at NET Premiums of £2. 15s. per cent.	No. of Years.	Age.
40	—	—	—	—	£1,000,000	£27,500	0	40
41	13	13	£13,000	£13,000	987,000	27,142	1	41
42	13	13	13,000	13,000	974,000	26,785	2	42
43	13	13	13,000	13,000	961,000	26,427	3	43
44	13	13	13,000	13,000	948,000	26,070	4	44
45	14	14	14,000	14,000	934,000	25,685	5	45
50	73	15	15,000	73,000	861,000	23,677	10	50
55	81	17	17,000	81,000	780,000	21,450	15	55
60	95	21	21,000	95,000	685,000	18,837	20	60
65	119	25	25,000	119,000	566,000	15,565	25	65
70	137	28	28,000	137,000	429,000	11,797	30	70
75	143	28	28,000	143,000	286,000	7,865	35	75
80	129	24	24,000	129,000	157,000	4,317	40	80
85	92	15	15,000	92,000	65,000	1,787	45	85
90	47	6	6,000	47,000	18,000	495	50	90
95	16	2	2,000	16,000	2,000	55	55	95
100	2	—	—	2,000	—	—	60	100
	1000		£ 1,000,000					

XXIX.—*A brief notice of the circumstances, under which the various existing Tables of Mortality were calculated, may be interesting:*

So little was the average duration of life understood at the beginning of the last century, that in some of the public loans of that period, Government paid an annuity at the rate of 14 per cent. on a single life, 12 per cent. on two lives, and 10 per cent. on three lives; and in 1704, annuities on single lives were granted for 9 years' purchase, on two lives for 11 years'

purchase, and on three lives for 12 years' purchase.* If the rate of interest were now, as it was then, 6 per cent, these prices for single lives would, according to the Carlisle tables, correspond with ages between 57 and 60, and would be too little by about 50 per cent. for all ages below 40 upon an average.

The Northampton table was formed by Dr. Price from the Bills of mortality kept in the parish of All Saints, which is the largest of the four parishes of Northampton, during the period intervening between the years 1735 and 1780, and corrected by the result of other registers.

These local observations were too confined in extent to be applicable to the accurate determination of the chances of mortality among the general population of the kingdom; and they soon became obsolete in point of time, even for the measurement of the mortality of the town or parish from the experience of which they were calculated. This table was adopted by the Equitable Society for Life Insurance in 1789, and subsequently by many other insurance offices, and it is one on which they still compute rates for the insurance of lives, notwithstanding its *inaccuracy has been made evident by the results of their own experience, and notwithstanding their knowledge of this fact is made apparent by their rejection of this table, as a basis for computing the rates, on which they will grant annuities. Dr. Price also formed tables from observations made at Chester, Holy Cross in Salop, Warrington, and Breslaw.

XXX.—The Carlisle table was formed by Mr. Milne from observations made by Dr. Heysham during the years 1779 to

* [Cleghorn, Edinburgh, 1834. Parliamentary Paper, 443, 1858.]

† [In 1854 we succeeded in inducing the Legislature to prohibit the use of this table in measuring life contingencies for the valuations of ecclesiastical leases and enfranchisements. (17 & 18 Vict., c. 116, s. 12.)—See our *Treatise on Copyhold and Church Property Enfranchisements*.]

1787, upon a population of about 8000, in the town of Carlisle. The period of nine years was too short to determine the average mortality of that town; the population also and the place were too small for its experience to be applicable to the whole country. This table represented the duration of life much more favorably than the Northampton, and is at certain ages singularly close to the results furnished by Dr. Farr, from the returns of the census of 1851; but Mr. Farren remarks with justice:—"The Carlisle table of mortality, as is sufficiently well known to all who have used it, and as will be immediately apparent to any one who will take the trouble to cast his eye down the column of 'decrement,' stands much in need of adjustment. Mr. Milne, its constructor, although he admits that he distributed the numbers given by the observations among the separate years of age, by a tedious tentative process, in which he may have committed error, seems, nevertheless, to be of opinion that the resulting irregularities may be indications of a law of nature, resulting from our structure. In the present more advanced state of our knowledge with regard to the laws of mortality, many persons would not, now, be found to agree with him."

XXXI.—From the yearly reports made to the members of the Equitable Assurance Society, an eminent Actuary, Mr. Griffith Davies, calculated the mortality amongst its members, who were select lives and chiefly males, and this table was confirmed by the investigation of Mr. Babbage and Mr. Gompertz. Some foreign tables have, also, acquired reputation. The tables in general use in France, until the recent ones by M. Dumont Ferrand and M. Legoyt, were calculated by M. de Parcieux. They are six in number; the first, from deaths, mostly during the years 1689 to 1696, amongst the nominees of the French tontines; the second, third, fourth and fifth from the deaths among the monks of certain orders in Paris; and the last from the deaths among the Nuns at

Paris. The persons, from whose mortality the last five tables were calculated, lived under such peculiar circumstances as to render the results, only good as data to their own class, and in their own time and country. The lives in the first table were also select; and the experience, deducible from them, was inapplicable to the general population of France even of that period.

XXXII.—Incorrect data, like bad principles, produce a series of evil consequences. Upon the Northampton table the government had granted annuities to the extent of £810,000 per annum. For a life of sixty £10. 6s. 3d. per cent. annuity was allowed, while taking the price of stock to be between 79 and 80 (which is the average of the last one hundred years) the annuity ought to have been but £8. 10s. 7d. The deferred annuities were granted on still worse terms. Mr. Finlaison had the merit of calling the attention of several successive Chancellors of the Exchequer to the subject, representing that in April, 1827, this loss was advancing at the rate of £8000 every week, and during the three previous months had exceeded £95,000. The result of this representation was an order to Mr. Finlaison, senior, to proceed to form more correct tables, and a short time after they were completed, the evil was stopped by Act of Parliament.

For the purpose of investigating the true law of mortality, which prevailed among the people of England, Mr. Finlaison made his observations over 25,000 life annuitants, who had been registered as nominees in Tontines, and who were chosen by lot from the children of the clergy and magistracy throughout the country, extending over a period of more than thirty years. His table exhibited the expectation of life as it was in 1825, and as it was a century before that year, and discovered a very extraordinary improvement of human life in the interval, as well as a great difference in the duration between the two sexes. The duration of life in 1825, compared with what it was a century

ago was nearly as four to three, and the expectation of a female life at birth to a male as 55 years to 50. Mr. Finlaison, also, calculated the mortality, which prevailed, during the years from 1814 to 1822, amongst 52,682 Chelsea out-pensioners, and 20,210 Greenwich out-pensioners. The Expectations of their lives were better than those shewn by the Northampton table; after 50 they were as good as those in the Carlisle table, and came very close to the Swedish; these lives being for the most part originally good, though many had suffered from service in foreign climes and severe wounds, were considered by Mr. Finlaison as better than those of mechanics or labourers in general; upon the whole it cannot be doubted, that the tables framed by Mr. Finlaison were the best extant, until the appearance of the tables that are furnished through Dr. Farr by the Registrar-General, which, being improved at each successive census, will of course, in due time, supersede all other laws of mortality.

XXXIII.—To determine, from time to time, the number of people inhabiting a country and owing allegiance to its government, is a matter of great national importance. A very little reflection must serve to convince us, that an accurate acquaintance with the absolute numbers of the people, and still more, with the various physical and moral conditions under which they take their places in the community, is necessary to the full development of the national resources: when by the recurrence at stated intervals of these enumerations, we shall be able to compare the progress made by the nation at different periods, as regards all those circumstances which properly should be comprised in the enquiry, the task of the government and the legislature must be greatly simplified; and on the other hand it seems hardly possible, without such an intimate and accurate acquaintance with the progressive condition of a country, as can alone be obtained by means of statistical inquiries, that the art of government should ever advance be-

yond the region of experiment, or assume the dignity of a science.

Former enumerations, made in the United Kingdom, were not so conducted as to lead, in any material or satisfactory degree, to this desirable end. If it had been possible at the first census in 1801, to suggest and carry out such a comprehensive plan, as would have embraced all the principal points which it is desirable to ascertain, and which could have afforded means for comparison with the same class of facts ascertained at subsequent decennial enumerations, a great light would have been thereby thrown upon many questions connected with the public weal, which are now involved in doubt and obscurity. The comparative progress made between the three decennial periods that occurred from 1801 to 1831, might have afforded peculiar means of instruction. From 1801 to 1811 the nation was engaged in war; the next interval was of a mixed character, being almost equally divided between war and peace; and the ten years from 1821 to 1831 were passed in profound peace. If the census of 1801 had been so conducted as to afford all the useful information, which such inquiries are fitted to bring to light, and if the subsequent enumerations had been made so as to admit of comparing one period with another, we might, or rather we must have been able, far more accurately than we now can, to estimate the consequences of war, and its influence upon the material condition of the people.

XXXIV.—The following facts are interesting:—

1.—In England and Wales births are to deaths as 3 : 2 ; boys to girls born as 105 to 100. (*The ratio fluctuating between 104 and 105 to 100, or 26 to 25, and 21 to 20.*)

2.—In 1000 inhabitants in England and Wales,

33 are born	} yearly.
22 die	
16 are married	

3.—The population of England increased *from excess of births over deaths* during the year 1856 by 258,273 persons, or 708 per diem. In 1857, by 259,710 persons, or 712 per diem.—London by 30,156 persons, or 83 per diem in 1856; 30,474 in 1857.

4.—In the year 1852, 1000 persons a day emigrated from the country ; in the year 1856, 484 a day; in 1858, only 312.

5.—The mortality of males is at the rate of 2.313 per cent. for the average of 20 years, 1838-57 ; whilst of females it is 2.153 per cent., which rates are to each other as 107 : 100 ; that is, if 100 females die out of a given number of females, out of an equal number of males 107 males die. The rate of mortality in England is lower than that of any other country in Europe, as appears by the following statement :—

					Annual Mortality.		
England	-	-	-	-	1 death in	45	population.
France	-	-	-	-	1	„	43 „
Prussia	-	-	-	-	1	„	38 „
Austria	-	-	-	-	1	„	33 „
Russia	-	-	-	-	1	„	28 „

XXXV.—The total population of the world is estimated at 1288 millions, as follows :—

1.—By race

Mongolian Race	-	-	-	Millions	522
Caucasian	-	-	-	„	369
Malayan	-	-	-	„	200
Æthiopian	-	-	-	„	196
American	-	-	-	„	1
					Millions 1288

2.—By religious denominations

Christians	-	-	-	-	Millions	335
Jews	-	-	-	-	„	5
Asiatic Religions	-	-	-	-	„	595
Mahommedans	-	-	-	-	„	160
Heathens	-	-	-	-	„	193
						Millions 1288

XXXVI.—The following are the populations of some of the most important countries, according to the most recent returns (with which we have been favoured by Dr. Michelsen, of the Board of Trade) :—

*Belgium	-	-	-	-	Millions	$4\frac{1}{2}$
German States	-	-	-	-	„	$43\frac{3}{10}$
<i>viz.</i> :—Austria (<i>proper</i>)						
	-	-	-	-	Millions	13
Prussia	-	-	-	-	„	13
Bavaria	-	-	-	-	„	5
*Hanover	-	-	-	-	„	2
*Wurtemburgh	-	-	-	-	„	$1\frac{7}{10}$
Other States	-	-	-	-	„	$8\frac{3}{5}$
Austrian Empire	-	-	-	-	Millions	$39\frac{1}{2}$
*Holland	-	-	-	-	„	$3\frac{1}{2}$
*Denmark	-	-	-	-	„	$2\frac{1}{2}$
Sweden and Norway	-	-	-	-	„	5
Russia	-	-	-	-	„	65
Turkey	-	-	-	-	„	37
*Greece	-	-	-	-	„	1
Italian States—						
*Lombardy	-	-	-	-	Millions	3
*Venetia	-	-	-	-	„	$2\frac{1}{2}$
Sardinian States	-	-	-	-	„	$5\frac{1}{6}$
*Roman States	-	-	-	-	„	3
*Tuscany	-	-	-	-	„	$1\frac{4}{5}$
Two Sicilies	-	-	-	-	„	9

Spain	-	-	-	-	-	Millions	16 $\frac{1}{2}$
*Portugal	-	-	-	-	-	„	4
*Switzerland	-	-	-	-	-	„	2 $\frac{2}{5}$
British India	-	-	-	-	-	„	180
America	-	-	-	-	-	„	59
<i>viz.</i> :—United States							Millions 28
*British America							„ 2
Mexico							„ 7 $\frac{1}{2}$
Brazil							„ 7 $\frac{2}{3}$
Other States							„ 14
*Australia and Polynesia	-	-	-	-	-	Millions	2

XXXVII.—The following Table exhibits the progress of the population at various censuses, and shows that:—

While the population of Great Britain has sensibly increased, the progress of England and Wales has been most remarkable, and that London increased (in spite of deaths and emigration) at the rate of 41,382 souls a year, in the 10 years 1841 to 1851, partly from *excess of births over deaths*, and partly by excess of *Immigration over Emigration*.

THE POPULATION WAS

	In 1750.	1801.	Increase in 50 yrs	1841.	1851.	Increase in 10 yrs.
	Millions.	Millions.	Millions.	Millions.	Millions.	Millions.
England & Wales	6 $\frac{1}{2}$	8.893	2 $\frac{1}{3}$	15.914	17.928	2.014
*Scotland	...	1.608	...	2.620	2.889	.269
Ireland	...	...	...	8.020	6.330	dec. 1.690
Great Britain & } Ireland	...	...	...	26.833	27.452	.619.
France.....	...	...	...	37	36	dec. 1
*London	...	.959	...	1.948	2.362	.414

* It is interesting to compare the populations of the countries marked thus * with that of London.

PART I.

Observations on Life Assurance, with an account of the Deposit and other Systems having for object its extension.

ART. 1.—Our purpose in this part will be, mainly, to bring forward suggestions for the greater extension of life assurance among the middle and humbler classes, by removing, as far as may be practicable, the obstacles which exist, both as regards the public, and the life assurance companies themselves, in the adaptation of the system to their respective requirements. To make the remedies intelligible, we shall have to mention some of the obstacles ; but it will be advantageous to give, beforehand, a short account of the nature of a life assurance company, as described by Mr. De Morgan.

If a large number of persons, all of the same income and prospects, and all certain of the same duration of life, were to choose a common bank, in which to deposit their savings, each laying by a given proportion of his income, it is obvious that each would receive the same sum as the rest at his decease ; but if the lives were of unequal and uncertain duration, this result would no longer be produced. It might, however, be attained by a covenant, that all sums paid in should remain till all were dead, and then be equally divided among the executors of the parties. Such a bank might be called an equalization office, and it would present the first approximation towards an insurance office such as those which at present exist.

As yet, the interest of money has not been mentioned.

Suppose the equalization office to pay no interest; and suppose all the lives to be 20 years of age, such as are described in the Carlisle tables, the average duration of which is $41\frac{1}{2}$ years. If then, every person pay £1 per annum, each will ultimately receive £ $41\frac{1}{2}$, which is the mere compensation of the inequality of life. Such persons would enter into a mutual covenant, by which, those who lived beyond the average term, would divide the surplus of their savings among those who fell short of it.

Probably, if the following question were put to all those whose lives are now insured:—"What is the *advantage* which you derive from investing your surplus income in an insurance office?" more than half would reply:—"The *certainty* of my executors receiving a sum at my death, were that to take place to-morrow." This is but half an answer; for not only does the office undertake the equalization of life, as above described, but also the *return of the sums invested, with* compound interest*.

No one can form an accurate idea of such an establishment, who does not consider it as a Savings Bank, yielding interest, and interest upon interest. This is the reason why an office, which charges for its insurance more than it is worth as an insurance, may nevertheless put its contributors in a better position than they could have held, if there had been no such institution. To make this matter clear, let us consider the working of a simple investment office. A large number of individuals subscribe a sum, which they trust to an individual or a company to employ, yielding them the return at some fixed but distant period. Let each share be £100. The best thing an individual could do with so small a sum, so as to have perfect security for its return, would be to invest it in the funds. He might also invest the interest, and thus obtain

* [See Div. II, or Treatise on Building Societies and Tontines, for several Chapters on the Mathematical Doctrine of Compound Interest, with Practical Instructions and Tables.]

compound interest, but it is not easy for an individual to do this. Unless he provide an agent to draw the dividends immediately on their becoming due, various circumstances will happen to prevent the immediate investment of the interest. It is not at all an unfair calculation to suppose that, upon each half-yearly dividend, a month will be lost, so that nominal compound interest for 42 years will only be really for 35 years. A single pound, therefore, laid up by a man aged 20 years, and improved for the average term of his life, at $3\frac{1}{2}$ per cent. interest a year, would only become £3. 6s. 8d.; while in the hands of a person who lost no time, it would become £4. 5s., or nearly a pound more. It can be easily seen why an office of any magnitude rarely has any delay in making investments. Let us suppose (with the author before quoted) that it should happen that ten individuals together paid £100 into the office on account of life assurance premiums in the same hour in which the executors of a deceased contributor received a claim of £100. The hundred pounds, which in the theory of the process should be sold out, or otherwise set free to meet the claim, is in its practice supplied by fresh premiums, so that the premiums of those contributors are making interest from the hour in which they are paid. The advantage will be greater in large transactions. The payments would, also, be made without any loss arising from the sale, perhaps at an unfavourable price, of stock to meet the claim. All expenses paid, it may be stated, with correctness, that an investment society can realize (apart from a bonus) $3\frac{1}{2}$ per cent. per annum compound interest. Hence, £1 improved during the average life of an individual, aged 20 years, would become £4 $\frac{1}{4}$.

2. The institution, thus described, is simply an office for the investment of premiums and the equalization of results. It becomes an insurance office, when it undertakes to pay a fixed sum for a fixed premium, at the end of a given time after the

decease of the party ; but, as Mr. Babbage remarks, so little was known of the relative value of human life, at the time life assurance began to be adopted in England, that persons were indiscriminately insured at one common rate, without regard either to age or health ; so that the young paid for the old, and the strong for the infirm,—a manifest injustice to the young and healthy members. Five pounds were at first demanded as the price of assuring a hundred pounds for one year on a life of any age ; and, at one establishment, middle aged and old lives were not taken even on those terms. This sum was, probably, fixed upon from its appearing that the annual number of deaths in London was nearly one in twenty of the population. It must soon have occurred to those who wished to have recourse to such transactions, that the chance of a person aged twenty dying within any given period, would not be so great as that of a person of forty dying within the same limit, and consequently that it was not equitable to demand the same rate of premium in both cases ; and it must also have appeared, that if a table of the number of persons amongst a considerable population, dying annually at the different ages of life, could be procured, by its means the relative chances of life of persons of different ages might be assigned. Further inquiries enabled actuaries to calculate a premium proportionate to each age, based upon what is termed the doctrine of Probabilities.

It has been justly remarked by the late distinguished actuary, Mr. Galloway, that this doctrine is one of the most important branches of mathematical science, inasmuch as it reduces to calculation the reasons we may have for expecting any contingent event, or believing any report or conclusion which may not be necessarily true. When we consider that the entire edifice of human science, with the exception of a few self-evident truths, such as the axioms of geometry, is nothing more than a collection of propositions, which can only be con-

sidered more or less probable, we can easily conceive the importance of a calculus which enables us to assign the degree of probability existing in each case.

The calculation of the probability of events, the chances of which are not known *a priori*, but deduced from experience, is founded on the supposed constancy of the laws of nature, in accordance with which, events arising from constant but unknown causes, when considered in large numbers, are always reproduced in the same order. Nothing is more remarkable in the various phenomena of the physical and moral world, than the constancy which is observed to exist in the recurrence of events of the same kind. For example, the ratio of male to female births furnishes a striking instance of the truth of this assertion :—

If we consider only a small number of births, nothing can be more uncertain than the result ; but if we take a very large number, as those of a whole kingdom, the proportion of male to female births, in the course of a year, is found to be almost invariable and nearly as 105 to 100.

The mean duration of human life affords another good illustration ; thus we find that the average duration of the lives of a large number of individuals living in the same country, is always found to be very nearly the same, notwithstanding the great uncertainty of human life individually, the difference of constitutions, and the various accidents to which mankind are liable : and experience proves, that pecuniary risks depending on these data, if undertaken in sufficiently large numbers, are among the least uncertain of all commercial speculations.

A similar constancy is observed in the results of other kinds of statistical inquiries. The number of crimes committed in a year, of the same species, the ratio of the number of trials to the number of acquittals, the number of conflagrations, the number of ships lost in a particular trade, of letters which pass through the post office, of patients admitted into the

public hospitals during a given period, are observed in every case to fluctuate between very narrow limits which approach nearer and nearer to each other, in proportion as the number of observations is increased. Hence, since experience teaches us that the recurrence of events approximates so nearly to fixed ratios, we are enabled to apply the calculus of probabilities to the solution of many of the most interesting and useful questions connected with our social and political institutions, and to determine the average result of a series of coming events, with as much certainty as if their chances were determinate and known *a priori*. It matters not whether the phenomenon under consideration belongs to the physical or moral order of things, the calculus is equally applicable when experience has determined the requisite data for the purpose.

3. One of the earliest applications of the theory of probability was that of determining from observations of *mortality

* [From the census of 1841, we have the table furnished in the Appendix; and the following shews the Rate of Mortality for the year 1853, which is interesting, as affording a comparison with the law prevailing in France.

England and France, Annual Rate of Mortality per cent. of Males and Females at different ages. —

Ages.	Annual Rate of Mortality per cent.			
	MALES.		FEMALES.	
	England and Wales.	France.	England and Wales.	France.
All Ages.	2.379	2.203	2.201	2.189
0	7.346	7.355	6.362	6.383
5	.847	.822	.813	.882
10	.506	.518	.540	.630
15	.828	.889	.861	.848
25	1.013	.874	1.064	.928
35	1.316	.985	1.251	1.007
45	1.958	1.474	1.596	1.339
55	3.278	2.893	2.845	2.732
65	6.912	6.521	6.133	6.598
75	15.897	16.022	14.106	15.376
85	31.297	29.273	28.968	29.371
95 and upwards.	47.305	38.422	45.770	35.966]

the average duration of human life, and the value of pecuniary interests dependent upon its continuance or failure. This particular application, according to Mr. Hendricks, appears to have been first thought of, or at least attempted to be carried into practical effect in Holland by Hudde, and the celebrated Pensionary De Witt; but the first tables of mortality, with the corresponding values of annuities on single lives, were constructed by our distinguished countryman Dr. Halley, and published in the Philosophical Transactions for 1693. Other tables were afterwards formed, which are called by the names of the places, where the observations were made on which they were calculated. The information, however, afforded by those observations, was neither so considerable nor so complete as it was desirable that the public should possess; the sources on which they chiefly depended being parish registers, which in those times could not be altogether relied upon for accuracy. (*See* Preliminary Remarks on this head.*)

* [When a society is not likely to have averages of lives about the same age, it is judicious to accept a lower amount of *Assurance Risk*, as the ages of the lives proposed are greater, so that the Present values of the *moral Expectation* of the current risks may not be greatly unequal. (See articles in Appendix on the distinction between *Moral* and *Mathematical* Expectations of Risks.)

The relative amounts, assured at various ages, might be proportionate to the number of premiums, that are likely to be received on each Policy, on the principle given in the Appendix. The following table will serve as a guide to Offices, taking a basis of £1000 at age 30, as the Limit or Maximum of Assurance to be kept, and shews the

Age.	Limit of Assurance Risk to be kept at each age.	Age.	Limit of Assurance Risk to be kept at each age.
	£.		£.
30	1000	60	559
35	945	65	482
40	883	70	395
45	820	75	317
50	745	80	261
55	653		

If the amount at 30 be greater, say £3000 or £5000, the corresponding amounts at the other ages will be proportionately increased. *A similar principle applies to the insurance of childrens' lives or other special risks.*

4. Associations for assurance having been formed, and a tolerably safe law of mortality calculated, it was deemed expedient to fix the rates of annual, or other periodic, contributions, upon such a principle, that not only might reasonable expenses of management be provided for, but, also, that every possible excess of early mortality among the members of any individual society beyond the average of the community at large, (according to the data by which the fundamental table of mortality had been constructed) should be met with a marginal fund. Hence it has been customary to charge assurers, a somewhat higher * premium per cent. than that shewn as necessary by the table of mortality; and this reasonable caution operates without injury to those, whose families benefit by the policies of assurance, in case of premature death; whilst those subscribers, who survive beyond the tabular average of life, have a compensation by way of Bonus, in case the institution meets with a less degree of mortality than the premiums had provided for.

In general the Bonus system would be deserving of approval, if applied on the correct principle referred to in Article xv. of our Preliminary Remarks, because it

* [In the Appendix are given the formulæ and methods for calculating *Premiums for Assurance* according to any table of mortality, with Instructions for Valuing Bonuses; and, in the Tables, are given the elementary data of the Carlisle and English Life Laws of Mortality. Mr. Willich, in his valuable "Popular Tables," has deduced the following simple formulæ for remembering the Expectation of life at any age between 5 and 60:

By the Carlisle Law, the expectation is two-thirds of the difference between $81\frac{1}{2}$ and the present age.

By the English Life Law, the expectation is two-thirds of the difference between 80 and the present age.

Thus, as a person becomes one year older, his Expectation diminishes eight months only; and three times the difference between the expectation of life at any two ages, is equal to twice the difference between the ages.]

must be considered as presenting one main improvement, that was wanting in life assurance, to remove the only selfish objection to which that beneficent invention of science was formerly open: *viz.*, that those who *live* pay for those who *die* beforehand; since the periodical allotments of *Bonus, if calculated upon the principles we have recommended, tend continually to restore the balance of advantage to those members who survive each division of profits. (See Math: Appx.)

5.—The natural desire of persons to provide, in times of comparative prosperity, against privations attendant on adverse circumstances led to the formation of assurance companies, which were early recognised as the safest and most advantageous mode of effecting that object. The experience of more than a century and a half, and the great success of assurance institutions during that period, have not only established the soundness of the principles involved, but confirmed, beyond doubt, the fact that they offer one of the most legitimate mediums, by which careful and thrifty persons can invest their savings in such a way as to secure a large contingent profit, with the least possible risk.

When the † first Life assurance office was founded at the early part of the last century, considerable distrust for a long time prevailed respecting the stability of an institution, which undertook so great an apparent risk as the guaranteeing of a definite large sum to be payable to an assurer's family, however soon he might die, in consideration of a small annual payment to be made by him during his life. But—when years passed away and the scheme, so far from becoming a failure, answered admirably—the feeling of the world changed, and in all directions new societies began to spring up, which sought for and soon obtained public support. These old companies were accustomed, however, to conduct their business in an exclusive

* [See, also, upon this subject, various valuable papers read before the Institute of Actuaries by Mr. Jellicoe, one of the Vice-Presidents.]

† [The most ancient existing Life office was founded in 1706.]

manner, regarding their own profit more than the convenience or the wants of the assured ; and it is only within a very recent period that societies have arisen based upon equitable principles, and extending their operations to an increased variety of objects. The mode of proceeding on the part of the old companies necessarily narrowed the field of their usefulness. Hence we find that even in the middle classes but a small proportion of persons are, or have ever been, assured ; whilst the industrious classes are wholly denied admission, excepting in a few offices of modern date, and although many advantages are held out to them by Savings Banks, those excellent institutions offer only a *personal* profit upon investments, and no contingent advantage to a depositor's family.

6.—The industrious classes have also been debarred from the benefits of life assurance by the uncertainty of their incomes. Even where they have insured, instances have too frequently occurred in which they have found it impossible to keep up their policies, as they advanced in years and their means of existence began to diminish ; yet a regularity of payment is the fundamental condition, which, in too many offices, if disregarded, causes the whole benefit they have so long struggled to secure, to be forfeited to the proprietors or other members. All, who have had opportunities of hearing the objections which are most frequently mentioned when life assurance is urged on public attention, are aware that the very first is the inconvenience that an assurer is exposed to, who burdens himself for life with the payment of an annuity, in the shape of a periodically recurring premium, whilst he does not know how soon his circumstances or views may change, and secondly, that if he be compelled to discontinue his assurance, he may lose nearly the whole of the amount he has paid in. Many persons also are unwilling to lock up from their own use, during their lifetime, the funds they are accumulating : some fearing that occasions may arise, when most pressing need may be felt for a portion thereof ; others thinking

that in their * old age, they may want the money for themselves.

Such objections are easily conceived :—For example, at age 40, a man in good health can assure his life by Table 1, page 51, for £500, by an annual premium of £14. 17s. 6d. Now it is exceedingly natural that he should entertain hesitation before undertaking such a payment, if his income be one fluctuating in point of time or amount—and those whose incomes are not of a fluctuating nature are the exception to the great body of the community. This consideration has had a most powerful effect in restricting the application of life assurance.

7.—Another obstacle is caused by the regulations of most of the assurance companies. They decline to receive Small payments, whether monthly or weekly, principally on account of the trouble and expense attending the same. This, however, is what persons of limited means mainly require. Yet the companies have reasonable grounds for their refusal. Take the case of an assurer proposing for a small sum, say £100, purchaseable by weekly instalments. At age 26, the annual rate is £2. 0s. 0d. per cent. (Table 1,) or weekly under 11d., while the preliminary expenses attending the medical examination of the life, with the inquiries into his

* [In Art. 39, p. 31 of the *Mathematical Appendix* relating to Allotments of Bonus, will be found a formula for apportioning the Profits of a society, so that, not only the Payment of Premiums by the Assurer may be made to cease in case of his living beyond the average age, but also that the amount insured may actually become payable to himself at a certain date, instead of to his representatives at his death.]

Such a mode of allotment would meet many of the objections to the Bonus system (which we have discussed in our Preliminary Remarks to this Treatise, Art. xiii.) and it is singular that it has not been thought of by the Older Companies, which charge the very high rates of Premium based upon the Northampton Law of Mortality.

Those rates are sufficient to enable the Policies to be paid to their Assurers at comparatively early ages. For example :—

The annual Premium charged by many old offices to assure £100 at age 20 is £2 3s. 7d. This rate exceeds the *Net annual Premium* (Reg. Gen. Returns 3 per cent. see p. xxx. ante.) by 11s. 11d. The difference (less 5 per cent. on the Premium for expenses) or 9s. 9d., applied by way of Bonus periodically, would (even if only 3 per cent. interest be realized) enable the Policy to be payable to the assurer at age 59, or in case of previous death.

Should the Society make surplus Profits from a higher rate than 3 per cent. being obtained from its investments, or by lapsed Policies, or other causes, then the age would come out earlier.]

habits of life, and the cost and trouble of the policy and papers, all combine to make his proposal as expensive as in the case of a larger assurance; so that to cover the first outlay the company is compelled to require the first year's premium to be paid in advance, even if they allowed the second and subsequent payments to be made by small instalments. (See Art. 39.)

8.—A further objection to the present system is the recurrence of *Fixed* payments:—An assurer (at say 35 years of age) who has assured his life for £1000 at £25. 10s. 0d. a year, or for a lesser or larger sum, might be able to pay one year £25 or £20, another year £35 or £30, but he is not permitted to have the option in his own hands of varying, as his necessities may dictate, even within reasonable limits, the amount and periods of his payments.

9.—Again, where policies are effected on the lives of other parties (as by *Creditors upon the lives of Debtors) to secure a debt, objection is raised that if the creditor die before his debtor, his family may not be able to keep up the policy and the premiums paid may be lost.

10.—The above objections may to some extent be obviated by a more general adoption of the following regulations in existing or future Industrial Assurance Offices.

1. †The *Suspension* principle. (See Art. 13.)
2. That assurers, desirous of discontinuing their annual premiums altogether, be allowed to surrender the policy to the office and receive, instead, another policy of less amount, equivalent to the premiums paid and free from future payments. (See Art. 25, Math: Appx.)
3. The *Deposit* system. (See Art. 18.)

* [To meet the objection in Art. 9 and in similar cases where the payment of the premiums depends upon another life besides that assured, the premiums may be calculated thus:—Let the present value of the assurance be estimated on the life involved; the value of the premium be measured by the joint existence of the life assured and that of the Purchaser, so that the payment of premiums should cease when either life dropped; the sum assured being payable to the creditor or his heirs only when the debtor dies. *For the Formulæ see Art. 6, p. 5 of the Mathematical Notes on the Valuation of Life Contingencies, appended to our Treatise on the Enfranchisement of Copyhold, Life-Leasehold, and Church property.*]

† [See several Tables for New systems of Assurance at pages 158, 159.]

4. The *Transfer* or *Substitution* plan. (See Art. 21.)
5. That the payment of premiums be allowed *quarterly, or monthly*, or to be compounded for by one single payment, commonly called the *single premium*; or that they may be made on the *descending* or *ascending* scales—that is, the annual payments diminishing or increasing in amount, so as to suit the convenience of persons whose circumstances are subject to change:—For instance—a man, whose income arises from fixed sources and will probably not alter, would find it convenient to pay for an assurance on his life by annual payments, which would diminish as his family increases and his children growing older entail greater expenses upon him. On the other hand, a young man starting in life, and hoping to increase his future income by his professional or other occupation, might prefer to pay less at first, and more afterwards, for the assurance which, at his death, is to provide for his family.
6. That Half the annual premium be allowed to be kept unpaid for the first seven years at £5 per cent. interest. (See p. 29.)
7. That there be no Fees on entrance, nor any expense in effecting an assurance.
8. That all claims by death be paid by the society at the expiration of one month, after satisfactory evidence of the death of the assured has been furnished.
9. That policies on the lives of parties, *who may die by suicide, duelling, or the hands of justice, be not void after five years' duration.*
10. *That the machinery of the Savings Banks be used for receiving weekly payments.

Other suggestions for the greater development of life assurance are mentioned in Arts. 17, 31, 37, & 40, of this Treatise, and in the Appendix; but we may remark that it would be useless for assurance companies to afford facilities for the Industrious classes to assure their lives, unless the Legislature devise some secure method by which the first object of an assurer may be attained, viz., *to provide for his wife and children in case of premature decease.*

11.—This can scarcely be said to be the case at present, as a Policy of Insurance taken out for the benefit of a man's family

* [See Part V of Division I, or the Treatise on Savings Banks.]

is liable, like any other property, for his debts should he happen to leave any at his death. This is a contingency which many eminent economists consider should be removed by the Law. They hold that, *by the act of marriage*, a man has undertaken the distinct responsibility of providing, as far as may lie in his power, for his wife and children; and, that if he incur other liabilities of a pecuniary character, his family have at least as great a right as any other creditor to require some provision to be secured to them by a Policy of Assurance; and that it is to the interest of the community at large that, where Insurances have been effected, the assurer should have the power of making some portion of them specially available for his family.

The question is a difficult one, and able arguments have been advanced both for and against such a power being sanctioned by the State. It may be observed, however, that the principle has already been recognised to a limited extent in this country, by the *Acts relating to Friendly Societies*, and its importance was long ago admitted in **America*, and on the Continent.

12.—On the other hand, *as regards Creditors*, the full development of Life Assurance has been prevented by the existing legal impediments to the *Assignment* of Policies, and by the frequent law expenses consequently incurred, in afterwards obtaining payment of the amount assured.

Whatever opinion may be entertained as to the propriety of legalising the assignment of †“Choses in action” generally, there can be little doubt that policies of assurance will never

* [The following law has been passed with this object in the State of New York. (April 1st 1840):—An Act for the benefit of Married Women.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:—

§ 1. It shall be lawful for any married woman by herself, and in her name or in the name of any third person, with his assent as her trustee, to cause to be insured, for her sole use, the life of her husband, for any definite period, or for the term of his natural life; and in case of her surviving her husband, the sum or net amount of the insurance becoming due and payable by the terms of the insurance shall be payable to her, to and for her own use, free from the claims of the representatives of her husband or of any of his creditors; but such exemption shall not apply where the amount of premium paid annually shall exceed three hundred dollars.

§ 2. In case of the death of the wife before the decease of her husband, the amount of the insurance may be made payable after death to her children for their use: and to their guardian, if under age.]

† [For the information of our non-legal readers we may remark, that property *in action* is where a man has not the enjoyment (actual or constructive) of the thing in question, but merely the right to recover it by a suit or action at law,

obtain their full value as commercial securities, until they are assignable by simple endorsement, like Bills of Exchange.*

Among the many arguments that can be advanced in favour of a law being passed to that effect, is one furnished by the fundamental principles of Political Economy, viz., that the prosperity of a trading community depends on the extension of credit, provided such credit bear some proportion to the capital which guarantees it. It is not necessary that the capital should be "in possession," and public credit is a thing essentially *personal* and dependent on the existence of the individual to whom it is given. It follows, therefore, that such an instrument as a Policy of Assurance, which so much facilitates the creation of capital, and gives security to the creditor, may be made a most important element in commercial operations;—and the rights of the party to whose possession it is transferred should, so long as he remains the holder of it, be undoubted and complete.

The Suspension principle.

13.—When the principles involved in Life Assurance cal-

from whence the thing so recoverable is called a "chose in action." Thus, money owed on a bond is a chose in action, for a property in the money vests whenever it becomes payable, but there is no possession till recovered by course of law, unless payment be first voluntarily made—A chose in action is a thing rather in *potentia* than in *esse*, though the owner may have as absolute a property in and be as well entitled to such things in action as to things in possession. By the strict rule of the ancient common law no *chose in action* could be assigned or granted over, because it was thought to be a great encouragement to litigiousness if a man were allowed to make over to a stranger his right of going to law. Hence the form of assigning a chose in action is in the nature of a *declaration of trust*, and an agreement to permit the assignee to make use of the name of the assignor in order to recover the possession. *The Court of Equity*, however, make the rule give way to the expediency (in a commercial point of view) of facilitating the transfer of property, and allow the assignment of a chose in action as freely and directly as the law does that of a chose in possession. Nevertheless, if A. after effecting an assurance on his own life assigns it and then dies, any action that may become necessary to recover the amount of the policy must be brought in the name of the executors of A., for the policy and the right of action as annexed to it, is a chose in action. The fact of the assignees giving notice to the assurance office makes no difference as to the parties in whose name the action must be brought. Notice is given in order to preserve priority over any future incumbrance that A. might create, or in case of bankruptcy or insolvency.]

* [The sum of money for which a bill is drawn is a chose in action and not a thing in possession; and by the general rule would be incapable of assignment, yet if a Bill be payable to order or bearer, the same is liable to be assigned.]

culations were not so well understood as at present, the older companies were able, for many years, to persist in a system of high charge as regarded their premiums, and in rigid regulations with respect to the continued validity of their policies. Increasing competition for business, however, gradually induced them to issue policies upon fairer terms to the assured, in which one of the first new features was "*The returning an assurer, on surrender of his policy, a portion of the premiums he had paid, if he found himself unable to keep it up,*" whereas it had been previously the custom to declare the premiums altogether forfeited.

With this improvement, the old plan of assurance went on as before, many policies being discontinued from time to time, through the temporary necessities of those who, not being always able to pay the renewal premium, were compelled to surrender their assurance to the office at a very great sacrifice.

No provision was ever attempted to be made for what unfortunately, as we have before said, so often happens to persons whose incomes are derived from personal exertions or trade—who frequently find that money, which they count on receiving, does not come in at the time they expect it; and this too, perhaps, just when a renewal premium has become due upon a policy, the non-payment of which within the three weeks' or month's grace (usually allowed) at once causes it to *lapse*, and thus destroys all the benefit, which the assurer had hoped (after perhaps many payments) to secure to his family at his decease.

This objection to the system must have militated materially even against the profit of the companies, by deterring many careful persons from assuring, who naturally felt little disposed to commence any undertaking, which possibly could be frustrated by *one year's temporary pressure in their incomes*. The number of persons now assured is great, compared with what was the case twenty or thirty years ago, and yet it is lamentably small relative to the population of this country. No one will venture to say that the numbers assured would not have been much greater, if this objection had been removed,

and few of the persons already assured are able to feel confident that the time may not come, when they may themselves be *temporarily* quite unable to meet the renewal payments on their policies when they become due.

To meet this contingency we suggested some years ago the following, as a regulation that might with propriety and safety be adopted ; from which it will be evident that no policy can ever be forfeited from mere temporary pressure in the monetary affairs of its possessor. It is thus stated :—

“As it may happen that an assurer may, from unforeseen circumstances, be unable to pay a premium when it becomes due, he will, on making application to the directors, be allowed once (or oftener, should the value of the policy at the time of the application permit it,) to have the privilege of Suspending the payment of that premium, (provided he has already paid three whole premiums at least on the policy, and it be one for the whole life of the assured.) And his policy will be endorsed to the effect that it continues in force, as if the premium suspended were paid, (provided interest at £5 per cent, be paid annually on the same) but charged with a debt equal to that premium, which will be deducted from the amount of the policy when the assured dies. The policy holder will have it in his power to free his policy from the debt, at any time, by paying the amount due. ”*

*The following example will illustrate the plan :—*A person aged 26, assures his life for £500 on Table 1, page 51, at an annual premium of £10. At the beginning of the fifth year of the existence of his policy, he finds he is without the money to pay the fifth premium. He avails himself of the privilege allowed by the society, and obtains the endorsement on his policy as before stated. The year passes away, and at the beginning of the sixth year he is alive, and still not able to pay up the suspended premium. He pays, therefore, the

* [“Half premium policies will not be entitled to this privilege, unless the arrears due shall have been previously paid up. Fourteen days’ notice requesting this permission, must be given, prior to the premiums becoming due. Where the policy is assigned or otherwise held in trust, the consent of the party interested must be given, in writing, to premiums being suspended.”]

sixth premium and the successive ones after that, and leaves the suspended premium as a debt against his policy; paying, however, annually, ten shillings interest upon it.

“We approve very highly of this plan, (says a writer of experience) for we have seen valuable policies lost to families by such pressure as is here described, and sold by auction at the price, perhaps, of three or four hundred pounds, after premiums to the amount of £1000 or £1200 had been paid upon them to the richest and most esteemed old assurance companies in London; and we do not hesitate to say, that any relief from so perilous a predicament, especially in times so precarious and changeful as those in which we live, must be welcomed as a manifest improvement in the system.”

14.—This plan of *Suspending the payment* is unique as yet in life assurance operations for three reasons:—

“1st. Because most societies will not lend on the mere security of the policy (if it has only been three years, or thereabouts, in existence), sufficient money to pay the premium; simply from the fact that the saleable office value of the policy, at that time, is not in their estimation equal to *one* premium.

2dly. The offices under the old system will *never* make any advance under £50, and some not under £100, and even £200, whilst the premium may be only £15 or £20; thus rendering it necessary for a person, who wishes merely to provide for the payment which has become due on his policy, to borrow more than he requires, for which, also, he has to pay a high rate of interest; and this he can only do, after such a number of years has elapsed as would cause the policy to be of sufficient office value to be security for the £50 or £100, which is the lowest sum that would be lent.

The 3rd reason is the most important. In obtaining a *loan* from a society on the *security* of a policy, it must always be *deposited* in the hands of the society during the whole time that the loan continues. This is therefore at once an

important objection, since policies are frequently required for *commercial purposes* (such as mortgage security, &c.,) and few persons would like, or be even able, to deposit their policies in the hands of the office by which they were issued."

None of these objections exist in the Suspension system: the privilege is granted without condition or deposit of the policy, and even when three years only have elapsed in its existence. The payment of a premium may be *suspended* should the assurer unexpectedly be unable to meet it, whatever be his age or the state of his health.

15.—Several instances have come under our notice of the benefits conferred by the Suspension principle. One we will mention in detail:—In 1847, among the numerous failures, a leading firm became bankrupt, and the services of its officers being no longer required, they were dismissed. One, who had been twenty years in a high confidential appointment in that firm, partook of the general misfortune. He lost thus suddenly a liberal income, relying upon the continuance of which he had effected assurances to considerable amounts in several companies. Not being able to make the renewal payments for 1847, he applied to each of the offices for permission to suspend the premium for 12 months, but the replies he received from all but one were unfavourable. All his policies therefore, but one, dropped and were lost to his wife and children. The other was allowed to continue in force. Within twelve months the excellence of the character, he had secured by past meritorious services, added to his qualifications brought him again into good employ, and he was enabled to keep up the Suspended policy. By the rules of the other assurance offices, he could within six or twelve months have possibly revived his policies, on paying a fine for their having lapsed, *provided his health had continued unimpaired*. But unfortunately, as so frequently happens, that health, which had been excellent some years previously when the assurances were effected, had been deteriorating for some time, and the sudden failure of

the firm in 1847, with its attendant anxiety, had militated against its improvement. The medical officers could not advise their Boards that the life was re-acceptable, or that the policies should be revived. He thus lost for his family, by temporary pressure arising from temporary loss of employment, in all but one solitary instance, the assurance protection which he had for many years struggled anxiously to secure for his family.

16.—Other examples might be mentioned, such as that of an eminent contractor whose assurances, to upwards of £38,000, were perilled in that same year by the difficulty of making the renewal payments, to meet which he was compelled to sell valuable securities at a loss;—of a private gentleman, called upon unexpectedly to pay a large sum for the delinquency of a friend in a government situation, whose surety he had become: a sum, which was equal to two-thirds of his income and left him without the means of meeting his own usual payments;—of professional men, and others in the enjoyment of apparently average fixed incomes, who have been from temporary difficulty unable to pay up their premiums on their policies.—These cases should come home to all our readers; and the Actuaries of Assurance Offices should cease to say, “Oh, what trouble such a plan would entail.” They should consider more the *unnecessary* harshness of their present system. We have said unnecessary, because the measure proposed has a principle for its basis not unprofitable to the office. The privilege, as worded above, can commence only when at least three premiums have been paid, because then the true value of the policy, or the sum which could be theoretically allowed for its surrender, is in general more than sufficient to cover the temporary insurance for one year, at the age of the assured when application is made to suspend. The office runs no risk, as the next and subsequent premiums would have to be paid in due time, and interest at 5 per cent. could be charged on the sum suspended. After a few more years of regular payment, the policy could, if required, bear a second or more

suspensions. The office would always be protected from loss and would be making 5 per cent. interest for the money-value of the privilege conceded, whilst 3 per cent. is the rate allowed to assurers in the premium tables.

17.—*Another practical improvement is becoming generally adopted.*—In many Societies an Assurer can at any time cease his future payments, and instead of receiving back a proportionate amount of the premiums he has paid, he can be credited with an equivalent reduced assurance payable at death, denominated a * Free Policy, because it is free from future charges for premiums. With but a few exceptions the offices do not, however, *at the time of issuing their policies*, fix the scale of reduced assurance, nor forego the arbitrary power, too often exercised, of dealing at their will with the assurer, when a time of difficulty has come and he is compelled to accede to almost any terms, from being unable to keep up his payments. To guard against this it is desirable to include in the conditions of the policy some such words as the following:—

That, at any time after five premiums have been paid, the assurer shall be at liberty to cease all future payments on his policy, and be considered as having purchased a reduced assurance, (payable three months after his decease,) to be estimated, according to the table † printed on the back of the policy, by subtracting from the original amount assured that amount of assurance which the rate of periodic premiums, that he has been paying, would purchase at his advanced age, when he proposes to cease all future payments.

The principle of such a clause is this:—If, at age a , the cost of a policy for £1000 is £20 a year, and, at age b , £35 a year;—then, reserving off the £35 in favour of the society a margin, say of 20 per cent. (or whatever it may be that has been charged in the annual premiums for the security and expenses of the

* [In the Appendix, pages 24, 25, we have given formulæ for estimating Free Reversionary Policies.]

† [The table so endorsed should be one of *net* premiums, so as to give the office a *small margin* in the calculation.]

office), £28 a year, at the advanced age b , is the *net* premium, which would assure a new policy for £1000; therefore, by rule of three, £20 at the same advanced age would assure £714. 5s. nearly; which is the sum that a policy for £1000, taken out at age a , would be diminished, if, at age b , the assurer determined to cease his future payments,—or, the policy would be reduced to £285. 15s. (See also Art. 25, Math: Appx.)

By this plan, policy-holders would at all times be aware of the *minimum* amount of Free Reversionary Policies, which they would be certain to have secured, in case of future unforeseen difficulties occurring to prevent the keeping up of the original amounts assured.

The Deposit system of Assurance for Sums payable at Death.

18.—A fourth improvement in life assurance is that termed the *Deposit or Accumulative system*, by which, to some extent, obstacles in the way of Industrial assurance are removed. For explanation we will quote from the prospectus of one of the assurance offices which have adopted it, basing its tables on the mathematical formulæ (involving *two* co-existent rates of interest) which will be found in the Appendix to * Division II of our Treatise on Associations for Provident Investment.

“This system of life assurance affords peculiar advantages to parties whose incomes are *liable to change*; inasmuch as, by depositing in the office *small or large sums*, not regularly year by year, but †when it suits their convenience, and in such

* [The Treatise on Building Societies and Tontines, p. 289 to 292.]

† [The same particulars relative to the health of the party are required as in the case of an ordinary assurance. And the person assuring may make his deposits as often and when he pleases, or only once.]

The deposit plan is capable of a variety of modifications, according to the life contingency it is desired to meet: one extension of considerable importance is the payment to the depositor himself, during his lifetime, of a portion of the current interest on the money deposited, with the further advantage of a policy of assurance of lesser amount, secured payable to his family at his death.

Another modification of the system, not at present practised, would consist in the allowing the assurer to keep up the difference between the amount of his Policy, at the time of withdrawal, and the sum deposited, by that annual premium payment, which would have been charged when he entered]

different amounts as they may wish, they can obtain a policy of assurance, of which the value increases with the number and amount of the deposits made; with a further advantage, "that should the assurer at any time wish to *withdraw* the whole or part of the money deposited, he may do so on giving *two weeks'* notice to the office, which will return him the money required, with an endorsement on his policy, reciting that its value is diminished by an amount proportionate to the sum withdrawn." [*This is illustrated in the example to Tables A, and B.*]

* TABLE A.

AMOUNT PAYABLE AT DEATH, which may be secured by the SINGLE Deposit of £.100 at the respective Ages against which each such Amount is set, with profits.

Age next Birth-day.	Amount Assured.			Age next Birth-day.	Amount Assured.		
	£.	s.	d.		£.	s.	d.
16	268	9	9	39	190	9	1
17	264	16	2	40	187	19	10
18	261	5	8	41	185	8	1
19	257	10	9	42	183	0	2
†20	253	12	5	43	180	12	10
21	249	17	9	44	178	4	6
22	246	6	8	45	175	15	8
23	242	6	11	46	173	6	6
24	238	11	6	47	170	17	7
25	234	10	7	48	168	6	2
26	231	1	7	49	165	12	1
27	227	11	10	50	162	17	4
28	223	13	6	51	160	1	9
29	220	7	9	52	157	6	11
30	217	9	5	53	154	15	2
31	214	10	1	54	152	3	9
32	211	13	6	55	149	13	5
33	208	16	2	56	147	1	1
34	205	15	2	57	144	16	11
35	202	14	5	58	142	11	5
36	199	14	10	59	140	10	3
37	196	14	5	60	138	13	4
38	193	13	1				

TABLE B.

AMOUNT PAYABLE AT DEATH, which may be secured by the SINGLE Deposit of £.10 at the respective Ages against which each such Amount is set, with profits.

Age next Birth-day.	Amount Assured.			Age next Birth-day.	Amount Assured.		
	£.	s.	d.		£.	s.	d.
16	26	16	11	39	19	0	10
17	26	9	7	40	18	15	11
18	26	2	6	41	18	10	9
19	25	15	1	42	18	6	0
†20	25	7	2	43	18	1	2
21	24	19	9	44	17	16	5
22	24	12	8	45	17	11	6
23	24	4	8	46	17	6	7
24	23	17	1	47	17	1	9
25	23	9	0	48	16	16	7
26	23	2	2	49	16	11	2
27	22	15	2	50	16	5	8
28	22	7	4	51	16	0	2
29	22	0	9	52	15	14	8
30	21	14	11	53	15	9	6
31	21	9	0	54	15	4	3
32	21	3	4	55	14	19	4
33	20	17	7	56	14	14	1
34	20	11	6	57	14	9	7
35	20	5	5	58	14	5	1
36	19	19	5	59	14	1	0
37	19	13	5	60	13	17	4
38	19	7	3				

* [At page 145, see also *Deposit Tables* for Term-certain Deposits and Deferred Annuities, which are calculated upon the formulæ for two co-existent rates of Interest before referred to.]

† [EXAMPLE:—Thus, a person aged 20 may, by the *single* deposit of £.100,

According to the *ordinary* plan of assurance, a comparatively small *annual* premium secures a large sum payable should the assurer die even the day after the *first* premium has been paid; but the premiums must be paid regularly year by year, and they cannot be withdrawn from the society, except in the shape of a loan on which the payment of interest is required.

“The deposit *plan* presents, on the other hand, the advantages of a secure investment for money, which, whilst it is constantly improving and increasing in value, may at any time be withdrawn, wholly or in part, with the same facility as a deposit account with a Banker. And, at the same time, so long as the money or any part of it remains deposited with the society, it produces a corresponding assurance effected on the life of the depositor, and entitles his family at his death to a sum of money varying with the age at which the deposit was made.”

19.—The peculiar advantages offered by this Accumulative mode of Assurance, are found to be applicable to an infinite variety of cases. For example: Parents and Guardians may make provision either for the present wants of children, or for the purpose of recovering, in the event of their premature decease, all charges incurred for their education and advancement in life. Thus, let a parent determine to lay by £50 per annum for the benefit of a child, now

acquire a Policy of £253 12s. 5d., or, in other words, a right to have £253 12s. 5d. paid at his death, even if that should take place within the same year in which the deposit is made; or if he have already made deposits, his Policy will be increased by this further amount, and he may, *at any time*, on giving two weeks' notice, draw out the whole or any part of the money so deposited, by the surrender of so much Assurance as, at the advanced age to which he has attained, would be purchased by the money withdrawn. Thus, on attaining the age of 60, he can withdraw £100 by surrendering £138 13s. 4d. of his Assurance, and the balance £114 19s. 1d., will remain to be paid to his representatives at his death. Or,

(†) A person aged 20 may, by the *single* deposit of £10, acquire a Policy of £25. 7s. 2d., or, in other words, a right to have £25. 7s. 2d. paid at his death, with the other advantages detailed in the Example to Table A.]

ten years of age, and to expend £75 per annum on his education and entrance into life. By effecting an *Accumulative Assurance*, the case would stand thus:—£50 is immediately deposited for the assurance, while the £75 is devoted to the purpose of education. If death should occur in the first year, the Company would pay £140, which would restore more than both premium and cost for education. If the Assurer chose to make a second Deposit* of £50, the sum assured would become £279. 5s.; and thus with each successive payment, the assurance would commensurately increase; so that in the—

3rd. year it would be	£	417	3	11	With Profits.
4th. „ „		554	0	5	
5th. „ „		690	2	2	
6th. „ „		825	13	5	
7th. „ „		959	18	4	
8th. „ „		1092	6	5	
9th. „ „		1222	19	3	
10th. „ „		1351	14	7	
11th. „ „		1478	10	10	

shewing that, in any interval from ten to twenty-one, there would have been the repayment, in the event of the child's death, of an amount exceeding *the whole of the premiums and charges for education*; and in the event of his living, either the refunding of all the premiums paid, £550, as a Capital wherewith to engage in business, or the guarantee of an Assurance of £1478. 10s. 10d. free from future charge for premiums, and yet increasing by the Bonus divisions.

* [A repetition of deposits, of equal or lesser amounts, may safely be allowed *without fresh medical examination* or proof of unaltered good health, as the office would not by such deposits be in a worse position than if the party, at the commencement, had at once decided to undertake recurring payments to procure a large policy; and this recurrence of optional deposits may be allowed, without inquiry into the state of health, until the aggregate of the separate deposit policies is equal to the amount which a fixed annual payment of the deposit would have assured. The assurance society may well incur the possible chance of a deposit being brought for assurance just when the health is deteriorated, as it would not, on the average of its deposit business, be in a worse position than in the cases where the deterioration of health takes place in ordinary assurance policies.]

20.—If our Deposit system were adopted by the Government through the Savings Banks, for small sums, it would become very general, as they have the machinery ready for receiving deposits, and the medical examination could easily be supplied. In Part II, herein, we have given (pp. 145 to 160) Tables suited to this purpose; and in Division I, (our Treatise on Savings Banks*) we have entered more fully into the subject. We have there shewn how, through the agency of Savings Banks, premiums payable in small weekly amounts, from a penny upwards, might be received for the assurance of sums of £5 or £10, payable at death. The very large number of assurances, which would be thereby facilitated, would render medical examination of the lives no longer of that primary importance, which it is at present to ordinary assurance companies.

The Transfer, or Substitution, principle.

21.—A Policy, if taken out for the whole of life (but not otherwise,) might be made Transferable to some other life, at the death of which substituted life, in place of the original one, the amount assured would be payable; the successor thus standing, relatively to the society, in the same position as his predecessor:—subject to the condition, that the substituted life should not be of greater age than the one in the policy at the time of Transfer, and shall also be in good health. A small fee, for office trouble, &c., of proportionate amount to the sum assured, is all the charge that need be required for this privilege; the Society taking no part in the arrangements which the parties concerned may choose to make between themselves.

22.—In the same manner, the privilege might be extended to the holders of policies of Endowment for Children or

* [Published by Messrs. Longmans, separately: see Part V, thereof, pp. 231 to 250. In 1848, we suggested that a clause should be inserted in the *Friendly Societies Bill* of that year, to enable the Government to grant small assurances up to £200, but the state of public business prevented its being then proceeded with.]

Provisions for old age ; if the said policies have been effected on the returnable rates.

23.—This feature removes one objection which has hitherto existed in the practice of Life Assurance ;—*viz.*, that when once a policy has been effected, it cannot be discontinued without considerable loss, even although it may have been sought for merely temporary accommodation, and on that account may be no longer necessary.

24.—The following cases will exemplify the operation of this principle :—

1. Suppose a gentleman in the army, to have effected an assurance upon his life in time of peace, and to be afterwards required to enter upon remote or active service :—if he wish to avoid an increase of premium, he may prefer at once to give his policy to a younger brother or friend, at the death of whom the amount assured would be paid ; and at the same time he may retain to himself, by mutual agreement, some interest in the policy so transferred.

2. Suppose a creditor to have effected an assurance upon the life of a debtor, as collateral security for a loan, which is afterwards paid off, so that the creditor has no longer any interest in keeping up the policy ; or, suppose a person to have borrowed money on mortgage from a private individual or a society, and to have assured his life, so as to secure his family from liability for the debt, in case of his decease before its liquidation ; in both these cases, the *Transfer* principle would be at once susceptible of advantageous application, as the power of transferring the assurances from their own to other lives, would allow of the policies becoming serviceable to other parties for similar commercial purposes. And as the assurers on the substituted lives would find it advantageous to pay an equitable sum for the transfer, the premiums paid by the original assurers would not be entirely lost when their object in keeping the policies up for their own benefit had ceased.

25.—If deposit policies were insured by the agency of Savings Banks, the Transfer privilege could easily be adopted. The party, whose life is to be substituted, being of not greater age, would attend at the Bank to be examined by a medical officer, appointed for that purpose, to whom he would pay a fixed small fee, and would obtain the following endorsement on the back of the policy, *viz:—The Life of ———— may be substituted in the within policy.* Whereupon the depositor would add:—*I transfer this policy to the above-named ———— .*

By the transfer principle the Legislature could make a deposit policy almost as negotiable and transferable as a bank note or bill of exchange ; for:—

- 1.—It would be paid up, and free from future charge.
- 2.—A certain portion of its amount would be withdrawable at short notice by the holder.
- 3.—Its full amount would be receivable by the holder, at the death of the life originally assured, or (if a transfer had occurred), of the substituted one.

The Substitution or Transfer could be renewed as often as the policy changed hands, provided healthy lives of not greater age could be found for the purpose of substitution.—The Society, or Savings Bank would clearly be benefited:—for every fresh life would be subjected to careful medical examination, and thus the vitality of the policies would be renewed. In ordinary assurances this is not the case. When once a life is accepted, if it subsequently deteriorate in health, the office cannot escape the risk, provided the payments are duly continued.

The Half Premium System.

26.—In most modern offices, a plan is adopted, which is commonly thus expressed:—“Half the annual premium on whole life policies may be kept unpaid for the first seven years, provided 5 per cent. interest be paid in advance.” This is a great convenience to persons whose means are likely to increase, but

who, at starting, are unable to afford so large an annual payment as would be necessary to make a suitable provision for their families on the full premium system. In the case of policies in connection with mortgages, moreover, the plan is of special advantage, as, during the first seven years (the term, perhaps, of a mortgage) the payments are little more than those for a short term or temporary policy, and at the end of the period, the assurance can be continued without renewing the medical evidence of health. If the assured die within the first seven years, the balance of premiums in arrear is deducted from the sum to be paid to the holders of the policy. If he survive the seven years, then, to keep up the policy, the original whole or full premium is payable for the future, and the arrears of the seven half premiums are either liquidated immediately, or stand over to be deducted from the policy at death.

In the latter case, the assurer pays interest annually thereon, or the accumulated amount of compound interest is deducted with the arrears when the death occurs. This system is now very generally in use; but we desire to caution Directors against misconception of the advantages which the Company derives from it. They should understand that its application cannot be allowed unless the half premiums paid, added to the interest on the half premiums in arrear, exceed on the average of the seven years, the rate payable (see Table 3, page 52) for a seven years' Term policy. Hence, referring to Table 2, we see that assurers on the *profit* scale of a Society using similar tables should alone be allowed the half premium privilege.

27.—The principle would, of course, be most advantageous to Societies adopting high rates, but it is neither safe nor desirable for those which proceed upon the system of low premiums. By Table 2, page 51, up to age 54, the system may be continued with but one limitation, *viz.*, that "Half the premiums are to be withheld only for *seven* years at interest, on the understanding that after that period, the whole premium shall be payable, with interest at 5 per cent. on the arrears until they are liquidated."

As an example, let us refer to the case of a life, aged 25 next birth-day, effecting an assurance for £1000, on the profit rate of Table 2. His proper payment, (at £2. 2s. 7d. per cent.) would be £21. 5s. 10d. a-year, instead of which he is allowed, during the first seven years, to keep back half of each premium—viz. £10. 12s. 11d., provided he pay 10s. 8d. interest on each accruing arrear. He, thus, has a whole life policy with little more cost for the first seven years than a seven-years' temporary policy by Table 3 would require; and to this is added the important option of continuing afterwards, his policy for the whole of life, whatever be the deterioration in his health, encumbered, of course, with £74. 10s. 5d. debt, bearing £3. 14s. 6d. interest, until liquidated, either by an annual payment, or by an allowance of *compound* interest, to be deducted at death with the £74. 10s. 5d. when the claim is payable. For the 8th and subsequent payments he would revert, in addition, to the whole premium £21. 5s. 10d. a-year. If the amount of arrears appear to the assurer to be heavy, he has to remember that in the past seven years, instead of £149 he has only paid £74. 10s., and whether he paid the amount due, or was accommodated with an advance (or permission to keep back premiums), his pecuniary position remains the same.

28.—By way of caution, we would remark, that every Assurance society to be secure should receive from each member such a premium paid down, as, at least, collectively, would pay current claims and expenses, independently of affording reserves for the future; and, strictly speaking, the system is only advisable and safe for a young society, where it possesses a sufficiently large protective capital, and where the privilege is allowed for a limited term of years, not exceeding seven. For a company with a small paid up capital to permit a longer extension of the half premium assurances would be analogous to a society transacting the ordinary business, but investing the greater part of its money in unavailable securities.

As an axiom of finance the directors of an assurance society are bound to invest only a small proportion of the funds, they receive from time to time, in securities which are not readily convertible into cash. This is so acknowledged, that it is customary for Actuaries to take care that the amount invested in the public funds shall always keep pace with that laid out on land-mortgages or other similar security.

29.—Theoretically, and on paper, it might be made to appear that not only half the premiums, but even a larger proportion might be withheld for more than seven years, with increased apparent advantage to the society, from the higher rate of interest, at which the money would seem to be laid out, than that credited to assurers in the tabular calculations; but the law of mortality is in operation all the time, and while the nominal assets of the society would appear to be in the most satisfactory condition, deaths would occur, and the actual available funds might not be sufficient to meet the claims to which they would give rise.

30.—The half premium plan moreover (although a convenience to the assured) does not give a young society all the advantage on the policy which it ought to seek to obtain. It would only do so if 5 per cent. interest were the limit of the advantage, that the directors could procure from the investment of that portion of the society's funds, which is not intended to be placed in immediately convertible securities. Such is, however, not the case. For every £100 invested on loans, an additional policy of assurance can in general be obtained and a fresh source of profit created. A young society, which receives the full premium upon its policies, is therefore in the best position, as it is thus enabled to lend out a portion in order to induce the effecting of new assurances. Of this benefit it is deprived by consenting to the half premium system.

31.—Other new features* may be briefly enumerated:—

* [As a question of date, it may be worth while to mention that these features, as well as those already explained, were set forth in the very early editions of our Treatise, published 1846 and 1851.]

1. *Whole World* policies might be granted, upon which the assurer should pay a fixed rate, leaving him at liberty to go to any part of the world, however unhealthy, provided his occupation be one rendering the latter contingency improbable:—the question being treated as one of *average*, and a small *continued* per centage, only, being charged above the ordinary payments in lieu of the *temporary* higher rate of premiums usually required in such cases.

2. *A diminution of half a year* might be made on the amount of premiums chargeable, when persons come for assurance within six months of their *last* birthday.

3. Policies should be issued with a covenant, that they shall be *indisputable* as soon as five annual premiums have been paid. A reasonable time would thus be allowed to provide against the chance of their having been obtained by fraudulent representations.

4. *Combination* assurances might be issued, whereby the proposer could, simultaneously, assure the *life and honesty* of the assured, or provide against his becoming unexpectedly incapacitated by accident or otherwise from earning his livelihood. (See page 43.)

As to the Indisputability of Policies.

32.—Even after the various improvements and additional privileges, which we have set forth as applicable to the present system of life assurance, have been effected and afforded, there is still a defect in the very nature of the contract between the Companies and the assured, which renders a life policy to some extent unmarketable when held as security for a loan, and uncertain when regarded as a family provision. The defect is this:—by the operation of the legal principle of *warranty* the assured is bound to the literal truth of all the averments made by himself and his friends at the time of proposing for the assurance, and any error in those statements, whenever discovered, vitiates the policy and renders all the premiums, however many, that may have been paid under it, liable to be forfeited.

It may be useful here to enumerate the various circumstances under which *in ordinary cases* the sum assured by a policy may not be recoverable ;—in all of which, the premiums that have been already paid under the policy would be liable to be forfeited to the Company granting the assurance.

1°.—If the premium be* not regularly paid.†

2°.—If the policy be taken out upon a life in which the assured has no pecuniary interest ‡

3°.—If the policy be not taken out in the name of the person really interested, whether a wagering policy or not.§

* [The Insurance Commissioners of the Commonwealth of Massachusetts have recently suggested the following project of law to the Joint Standing Committee of that State on Mercantile Affairs and Insurance :—

“SECTION 1.—No policy of insurance on life hereafter issued by any Company chartered by the authority of this Commonwealth shall be forfeited or become void by the nonpayment of premium thereon, any further than regards the right of the party insured therein to have it continued in force beyond a certain period, to be determined as follows, to wit :—The net value of the policy, when the premium becomes due and is not paid, shall be ascertained according to the ‘combined experience’ or ‘actuaries’ rate of mortality, with interest at four per centum per annum. Four-fifths of such net value shall be considered as a net single premium of temporary insurance; and the term for which it will insure shall be determined according to the age of the party at the time of the lapse of premium, and the assumptions of mortality and interest aforesaid.

“SECTION 2.—If the death of the party should occur within the term of temporary insurance covered by the value of the policy, as determined in the previous section, the Company shall be bound to pay the amount of the policy the same as if there had been no lapse of premium, anything in the policy to the contrary notwithstanding.”]

† [*Busteed v. West of England Assurance Company*, 5 Ir. Eq. R. (N.S.) 553. As to the effect of the days of grace usually allowed for payment of the premiums, see the cases of *Want v. Blunt*, 12 East 183, *Simpson v. Accidental Death Assurance*, 2 C.B. (N.S.) 257, *Pritchard v. Merchants’ and Tradesmen’s Assurance*, 3 C.B. (N.S.) 622. The company can however revive a policy that has lapsed, and waive the conditions thereof (*Supple v. Cann*, 9 Ir. Com. Law R. 1).]

‡ [14 Geo. 3, c. 48, commonly called The Gambling Act, 1774. This Act does not extend to Ireland; but Wagering policies in that kingdom have since been prohibited by 8 & 9 Vict. c. 109. (See *Bunyon on the Law of Life Assurance. Freme v. Brade*, 2 De Gex. & J. 582 on appeal : 27 L.J. 697 Ch.) Even if the policy is taken out in the name of the life assured, if it be in point of fact for the benefit of another person not having an insurable interest, it is null and void. *Wainwright v. Bland*, 1 M. & W. 33. *Shilling v. Accidental Death Assurance*, 2 H. & N. 42: 1 F. & F. 116 Erle, J : 29 L.T. 98 Ex.]

§ [See sec. 2 of the Gambling Act; *Hodson v. Observer Assurance*, 8 E. &

4°.—If any misrepresentation be made at the time of effecting the assurance.*

5°.—If the policy be obtained for a fraudulent purpose.†

6°.—If the life assured commit suicide, (whether of unsound mind or not) or die by duelling or the hands of justice.‡

7°.—If the life assured go beyond the limits allowed him by the endorsement on the policy.§

8°.—Finally, if the funds and property of the assurance company, as well as the capital subscribed by the shareholders, become exhausted, a clause in the policy may deprive the holder of any remedy against individual shareholders or directors.||

The effect of these various restrictions is to create difficulties in the mortgaging of policies.¶ It has become

B. 40. : 26 L. J. 303, Q.B.; but not for a simple misdescription, as when an assurer described himself as A.B., of S. Hall, *Esquire*, while at another place he was carrying on the business of an ironmonger. (*Perrins v. Marine and General Assurance* 1 L.T. (N.S.) 27, Q.B.) The Company cannot avail themselves, as against the assured, of any technical defect in the issue of a policy, such as the common seal not having been applied with due formality, if it appear on the face of it to be in proper form (*Charles v. National Guardian Assurance*, 29 L.T. 246, Q.B.; *Prince of Wales Assurance v. Athenæum Assurance*, 1 E.B. & E. 183 : 31 L.T. 149, Q.B.; *Athenæum Assurance* *ex parte Eagle Assurance*, 4 Kay & John. 549 : 27 L.J. 829 Ch.)]

* [(*Cazenove v. British Equitable Assurance*, 28 L.J. 259 C.P.) As to non-statement of an ailment possibly not avoiding a policy, if the assured be not aware that it is material, see *Ross v. Bradshaw*, 1 Black. Rep. 314; *Jones v. Provincial Assurance*, 3 C.B. (N.S.) 65 : 26 L.J. 272 C.P. As to how far the life and referees are agents for the assured, see *Everett v. Desborough*, 5 Bing. 503; *Huckman v. Fernie*, 3 M. & W. 505; and *Wheelton v. Hardisty*, 3 Jur. (N.S.) 1169, Q.B. : 5 Jur. (N.S.) 14 Q.B. : 8 E. & B. 232, in error : 26 L.J. 265 Q.B.]

† [See *Prince of Wales Assurance v. Palmer*, 25 Beav. 605, where the life assured was murdered to obtain the benefit of the policy; but not so, if the Company waive the forfeiture, (*Armstrong v. Turquand*, 9 Ir. Com. Law R. 32.)]

‡ [*Amicable Society v. Bolland*, 4 Bligh. (N.S.) 194, 2 Dow. & Cla. 1. Ho. of Lords; *Borrodaile v. Hunter*, 5 Man. & Gr. 639; *Cliff v. Schwale*, 3 C.B. 481; *Stormont v. Waterloo Assurance*, 1 F. & F. 22 Channell, B.; *Dufaur v. Professional Assurance*, 25 Beav. 599 : 27 L.J. 817 Ch.]

§ [*Reis v. Scottish Equitable Assurance*, 2 H. & N. 19. : 3 Jur. (N.S.) 417 Ex. The question of extra premiums has given rise to much litigation. *Notman v. Anchor Assurance*, 4 C.B. (N. S.) 476 : 27 L.J. 275 C.P.; *Fowler v. Scottish Equitable*, 28 L.J., 225 Ch. : 32 L.T. 119 Ch.]

|| *Athenæum Assurance* *ex parte Prince of Wales Assurance*, 27 L.J. 799 Ch. : confirmed 5 Jur. (N.S.) 558 Ch. on appeal; *Athenæum and Prince of Wales* *ex parte Durham*, 4 Kay & John 517.

¶ *Myers v. United Guarantee Assurance*; *United Guarantee v. Cleland*, 7 De Gex M. & G. 112 on appeal.

admitted, therefore, that, as far as legitimately can be done, it is desirable to remove them. Thus, our Suspension principle (p. 15) protects a policy from loss through temporary inability to pay the premium; and the plan of Whole World Policies (p. 32) avoids all difficulty in respect to transgressing the limits of travel, and all questions of extra premium. Most Companies, moreover, now insert a clause protecting assignees for value against loss in case of suicide, and some by what is called an unconditional policy, waive these and other forfeitures. But to protect the proposer against the consequences of unintentional misrepresentation is the object of an Indisputable policy.

Under the present law, and with policies of assurance of the ordinary form,* every circumstance stated by the proposer or his referees, whether† he consider it material§ to the question or not, must be literally true or the policy is void.

33.—Lord Mansfield, speaking of the parties on whom devolves the duty of ascertaining the state of the risk in life assurance, has given some heads for a rule in this matter:—
“The assured need not mention what the insurer takes upon himself the knowledge of, or what he waives being informed of: the insurer need not be told general topics of speculation;”—such as the nature of various climates as affecting the

* [No matter how frivolous, immaterial, or unimportant the falsely stated fact may be.—*Anderson v. Fitzgerald*, 21 Law T. 248 House of Lords.]

† [“A misrepresentation in a material point equally vitiates the contract, whether it be the misrepresentation of the insured himself or of his agents, and whether it proceed from fraud, mistake, or negligence.”—*Mr. Serjeant Marshall on Insurance*, p. 456. See also the learned Pamphlet on *Indisputable Policies*, by *Mr. Alexander Robertson, W.S.*]

‡ [*Lindenau v. Desborough*, 3 Carr & P. 353: 8 Barn. & C. 586.]

§ [“It is a first principle in the Law of Insurance, on all occasions, that where a representation is material, it must be complied with. If immaterial, that immateriality may be inquired into and shewn; but if there is a warranty, it is part of the contract that the matter is such as is represented to be, therefore the materiality or immateriality signifies nothing. The only question is as to the mere fact.” Lord Eldon, in the House of Lords, *Macmorran’s Case*, 3 Dow. 225, 10th July, 1815.]

constitution and health of Europeans, the healthiness or unhealthiness of different trades or occupations, and the degree of risk attendant thereon from danger by accidents, or the bad tendencies of particular courses of life.

With reference to matters coming within the knowledge only of assured persons, what is a fraudulent concealment or misrepresentation, depends simply on whether the matters were "material" to the consideration of the risk; this is a matter of fact to be ascertained by a jury: and if material, the consequence is a matter of law, and the policy is bad. This point has been ruled and carried into subsequent decisions. The materiality of the fact invalidates the contract; the knowledge of the fact, however, by the person taking out the assurance, on another's life, not being material to influence the issue for trial.

The distinction between *misrepresentation* and a *non-compliance with* warranty* is thus defined by that eminent lawyer :

"Insurance is a contract upon speculation, and therefore the special facts, upon which the risk is to be computed, lie chiefly in the knowledge of the insured only. The insurer trusts in his

* ["A warranty being in the nature of a condition precedent, and therefore to be performed by the insured, before he can demand performance of the contract on the part of the insurer, it is quite immaterial for what purpose or with what view it is made; or whether the insured had any view at all in making it; but being once inserted in the policy, it becomes a binding condition on the insured, and unless he can show that it has been strictly fulfilled, he can derive no benefit from the policy. The very meaning of a warranty is to preclude all questions whether it has been substantially complied with or not. If it be affirmative, it must be literally true; if promissory, it must be strictly performed. The breach of a warranty, therefore, consists either in the falsehood of an affirmative, or the non-performance of an executory stipulation; in either case, the contract is void *ab initio*, the warranty being a condition precedent. And whether the thing warranted was material or not, whether the breach of it proceeded from fraud, negligence, misinformation, or any other cause,—the consequence is the same. The warranty makes the contract hypothetical; that is, it shall be binding, if the warranty be complied with. With respect to the compliance with warranties, there is no latitude, no equity: the only question is, has the thing warranted taken place or not? If not, the insurer is not answerable for any loss, even though it did not happen in consequence of the breach of the warranty."—*Marshall on Insurance*, 3rd Ed. p. 354.]

statement, and proceeds upon confidence that he does not keep back any circumstances within his knowledge, to mislead the insurer into a belief that the circumstance does not exist. The keeping back, therefore, of such circumstances is a fraud, and the policy becomes* invalid, although the suppression should happen through mistake, without any fraudulent intention, yet still the insurer is deceived, and the policy invalid, because the risk run is really different from the risk understood, and intended to be run at the time of the agreement.

“The question therefore must always be :—‘Whether there was, under all circumstances, at the time the policy was underwritten, a fair statement or a concealment—fraudulent if designed—or, though not designed, varying materially the object of the policy, and changing the risk understood to be run.’

“A representation is a statement of the case, not part of the written instrument, but collateral to it, and entirely independent of it ; and it is sufficient that a representation be substantially performed.

“Even written instructions, if they were not inserted in the policy, are only representations ; and in order to make them valid and binding as a *warranty*, it is absolutely necessary to make them a part of the instrument by which the contract of indemnity is effected. If a representation be false in any material point, it will annul the policy ; and if the point be not material, the representation can hardly in any case be fraudulent.”

There is no distinction better known to those who are at all conversant in the law of insurance, than that which exists between a *warranty* or condition which makes part of a written policy, and a representation of the state of the case. Where it is a part of the written policy, it must be performed.

It is now usual to insert in the policy the substance of the statements made by the assured, or to refer to the written proposals and statements of the assured, whereby they are made a part of the policy, and to the truth of which he makes an admission.

* [“If there is a warranty, the person warranting undertakes that the matter is such as he represents it : and unless it be so, whether it arise from fraud, mistake, negligence of an agent, or otherwise, then the contract is not entered into ; there is, in reality, no contract.”—*Ellis on Insurance*, 28.]

34.—The general impression is, that all offices would find it to their advantage to frame their policies so that at the end of five years they may be *indisputable*, and to cover the risk of fraud, which is not of frequent occurrence at present, by an additional per centage on the premiums; for in most cases of past litigation, the public have displayed in favour of the family or representatives of the deceased policy holder an unfairly adverse feeling against the offices, however just their grounds of dispute.

The declaration of indisputability would lead to some increase in the effecting of assurances by timid, but honest persons, who at present unnecessarily fear that, in a policy, they may be leaving to their families a lawsuit for a legacy. On the other hand, in an actuarial point of view, the increased risk to the company in case of fraud, might easily be made a question of *average*; provided more details, than are now generally considered requisite, were demanded before treating as complete the chain of evidence upon which the directors are to found their decision as to the eligibility of a life. Under the present system, with all the vigilance exercised by careful managers, there is some natural reliance upon the probable veracity of the referees nominated by the life; and this reliance has existence more especially in the case of policies required with speed for mortgage transactions. The nature of the extra caution required cannot at once be described; and the difficulty will lie more with country than with town proposals, from the non-appearance of the former at the head office, where the skill and experience of the principal officers would be of service in detecting unfavourable circumstances, which might escape a local adviser. With an augmentation in the risk, it is possible that a slight increase might arise in the expenses to the office upon each transaction, through the necessity of obtaining some additional independent testimony as to the *past* habits of life of the proposed assured, as an adjunct to the special medical examination by the Company's own officer in the locality. At

present the medical examination refers mainly to the state of health at the time of the proposal. The private referees profess to give evidence as to the *past* career of the assured: but the principle of indisputability appears to demand on many points concurrent and independent testimony which could, probably, be procured from some person of standing, residing in the same locality.

35.—The increased expense, through the necessity of extended machinery, and the augmented risk from possible deception without the subsequent power of disputing, could be provided for by an additional and properly adjusted small margin on the premiums. The tables of offices are at present so moderate when compared with the benefits granted, as to be able to bear some addition without creating any sensible obstacles to assurers. A Proprietary office might adopt, without hesitation, the principle of indisputability; for against the increased risk, could safely be placed the probable profits from augmented business. The position of a Mutual Society, in which all the members partake of any loss through fraud or other cause, would be somewhat different, unless it be sufficiently old to have accumulated a Reserve fund for contingencies. It is probable that details would be obtained through increased investigation, and additional facts would be elicited through independent testimony, which, at present, friendship may lead a private referee to conceal. That these details might narrow the field of *acceptable* lives by suggesting hesitation in accepting them, is not likely; as, after all, the doctrine and practice of life assurance is essentially one of *average*, and the experience of offices proves that *sound* lives die relatively before their time, just as much as those which are considered doubtful.

The formidable objection, that the principle of Indisputability may increase the attempts of fraudulently disposed persons to seek assurances, can only be met, and it can in our opinion be met correctly, by viewing that contingency as one

of probability, and, as such, by giving to it its due estimation in fixing the degree of increase to the premiums; until a greater generality of adoption of the principle, and a more perfect system of evidence should subsequently prove the first increase to be in excess.

On the Mortality of Sound Lives.

36.—In the practice of life assurance, one element exists of more importance than may be imagined. It is the *tendency* of persons in *sound* health, and endowed with excellent constitutions, to expose themselves to illness and premature decease, by imprudence and reckless neglect of ordinary precautions. While the directors of assurance companies usually decline proposers whose constitution is imperfect, or whose organs are not unimpaired, they congratulate themselves on the accession of all assurers with respect to whom the medical adviser will give a favourable report. By this circumstance, the number of assurable lives is greatly diminished, and many persons are debarred from the benefits of life assurance, who, in the long run, do not die before the estimated average time. So restricted a system is unnecessary, for, if a scale of increased rates were deduced from observations of an extensive number of cases involving each disease, and applied by a skilful medical officer as a guide in each particular instance, then a large number of apparently impaired lives might be assured, who would be found to yield a return less productive of loss to the society, than a similar number of strong persons (assured at the ordinary rates), whose self-security in the possession of health would render them careless of precaution to keep it. That “a creaking door lasts longer on its hinges” is, by the experience of assurance companies, found to be true. Taking for instance the claims that have arisen in the course of the last ten years in one successful company, the proportion of deaths from imprudence and accident to those from natural causes, is as 1 to 2; all having been accepted as sound and excellent lives.

A few of the many causes of unforeseen death may also be mentioned :

1. The life of a young gentleman of fortune, and a magistrate for the county, residing upon his estate in Cornwall, was assured as one of three in a lease for £1000; his age was twenty-six, and the medical opinion was to the effect that he was a first-class life; two years after the policy was issued, he caught cold in consequence of having neglected to change his wet clothes after returning from grouse shooting, and he died, after an illness of but few weeks. The premiums paid were £42, and the policy was £1000.

2. Another fell into his tanpit and was drowned three years after insuring his life for £800. The widow and children then received a provision, which had only cost £71 8s.

3. A young nobleman insured his life for upwards of £30,000 in various offices, by way of marriage settlement in case he should pre-decease his father. He died within three years of rheumatic fever in consequence of exposure to cold.

4. W. F. K., aged 24, was assured for £300. Shortly after the second premium had been paid he was attacked with fever, which resulted in death four days afterwards.

5. A thriving tradesman assured, in the month of May, for £300 and was pronounced by the medical examiner to be a first-class life. Early in July of the same year he died of illness arising from exposure after a Turkish bath.

6. W. L., was assured for £300 in July, and died in the following September, of typhus, after six days' illness.

7. F. P., aged 39, was assured for £400. Before the second premium became due he had met with an accident, which rendered amputation of the arm necessary; low fever supervened, and he died in ten days, one premium only having been paid.

The experience of most assurance societies furnishes similar sad records of the uncertainty of human life. Moreover, many professions expose their members to risks of sudden illness: medical men and clergymen are in continual danger of contagion, so much so that one eminent practitioner, Dr. Christison, has recommended that "it should be made a condition of acceptance in such cases, that the proposer

has either already had typhus, or has been freely exposed without taking it."

37.—We do not say that we actually advocate the acceptance of *diseased lives* in the present limited extent of assurance transactions, and in the absence of any sufficient data, as yet, to serve as a guide in such cases ; yet, we recommend to directors a reconsideration of the interests of that numerous section of proposers, whose state of health and occupations subject them (without having any actual organic disease) to be denominated 'second class.' A slight margin on the tables used for healthy assurers would render them even more profitable than a similar number of robust lives ; because they are less likely, if taken in sufficiently large numbers, to give rise to such aberrations from the law of mortality, assumed as true for them, as the latter class do. While delicate, or slightly impaired, lives would be gradually and slowly failing from the waste of their faculties in the course of that average of years, for which the charge of premiums would provide, the hardy and robust would present numerous cases of premature death by fever and inflammatory causes, frequently caused by too good living ;—too free indulgence (perhaps not habitually) in the juice of the grape, or fermented liquors ;—by* accidents attending manly sports and amusements ;—by overstraining in feats of strength ;—by neglect to remove wet clothes, as in the case of the young magistrate who died after grouse shooting ;—by sudden changes from heated ballrooms to the cold air out of doors, without sufficient additional clothing ;—by damp feet, and by numerous other apparently trivial circumstances, which speedily prostrate the strong man, presuming too much on the excellence of his health. We contend, therefore, that the field of assurance should no longer be limited ; that, inasmuch as life assurance is merely the result of judicious money-measurement of the contingencies of

* [As to legal points connected with "accidental death" assurance, see *Martin v. Traveller's Assurance*, 1 F. & F. 505, Wightman, J.]

human existence, the system may safely be extended; that attempts should be made to determine a proper charge for the general assurance of lives, although they may have apparently departed from the assumed standard of average good health. If this were done, we should cease to meet with aged persons, who tell us of their having been declined by such and such an office when young. On the other hand, this and similar publications of the actual experience of assurance companies in respect to premature decease among *sound* lives, should induce fathers and husbands to secure without delay, while their health permits it, the benefits of assurance for their families.

Fidelity or Integrity Assurance.

38.—In the Treatise on Benefit Building Societies we have set forth, incidentally to the question of making Building Society Shares available as security for fidelity in situations of trust, a plan for *Combining in one policy Life Assurance and Fidelity Guarantee*; and since our remarks in that work were written, the suggestion has been adopted by several new companies, some of which have been formed especially to carry it out. It may be desirable here to recapitulate shortly the leading arguments on the subject, as it is one which naturally comes under consideration in the present Treatise :—

1st.—The contingency of want of integrity is one to which the laws of average and probability apply, just as much as to the ordinary chance of mortality within any given period: the risk, and the corresponding rate of premium necessary to provide against it, may be ascertained from statistical data, becoming every day more and more complete; and in consequence, by an easy mathematical adjustment, the rates may be so arranged as to provide for the payment of the sum assured by the policy to the family of the assurer at his death, if he continue honest; while if, in the meantime, he committed a breach of trust, the policy would become payable

to his employer, and his own interest therein be entirely forfeited.

2nd. With regard to the suretyship of private bondsmen, instances are constantly occurring in which persons of great respectability are obliged to forego excellent situations, either from the great difficulty of obtaining the requisite security, or from a repugnance to place their relatives or friends under the obligations involved therein. Moreover, in large establishments, both public and private, where the securities are numerous, and the sureties often resident in many different parts of the country, and known only by repute, it is almost impossible to watch over their continued existence and solvency; and cases of default have not unfrequently occurred where, upon investigation, it has been found that all the securities had been dead, or had gone away for many years.

3rd. With respect to the simple Guarantee Societies, they have been established solely to obviate these defects of private suretyship, and undertake, on the annual payment of a small sum, to make good, in case of default by fraud or dishonesty, any losses which may be sustained to an amount specifically agreed upon. Their guarantee is therefore much more valuable than the bond of any individual, yet their plan is still defective, as it virtually does not offer a sufficient discouragement to dishonesty. In point of morality, a pure fidelity policy does not possess the advantages afforded by private suretyship, inasmuch as the young man, to whose nature it would be repugnant to bring disgrace and ruin, by his misconduct, upon his relations or friends, might feel little anxiety as to the pecuniary loss inflicted upon a guarantee society. In other words, it is conceived that a disposition to fraud is not effectually checked,—the reflection arising, that as the rates of a guarantee society pre-suppose the existence of such a disposition on the part of, at least, one out of every two hundred of its selected assurers, the loss sustained by the society

through such defalcation would be but the result of the "*average.*"

4th. In the combination plan we have suggested, the subscribers, while satisfying the requirements of their employers in respect to their honesty and good conduct, would obtain an additional provision for their families. They would receive a powerful stimulus from the knowledge, that their subscriptions would become forfeited in the event of their acting dishonestly. Hence, the greatest moral benefits might be expected, as the members of such an association would serve as a check upon each other, being mutually interested by its effect on the Bonus divisions, in preventing loss from fraud or dishonesty. A new incentive to integrity would be gained; and while a sum of money would guarantee the fidelity of the investor, the mere fact of his admissibility to such an assurance would have its value as a testimony to his character.

Industrial Assurance.

39.—In respect to the important question of providing a safe and easy means of effecting life assurance by small payments, and the difficulties, referred to at page 12, which stand in the way of effecting this object through ordinary Life Assurance Companies, we would refer our readers to art. 20 herein and Part V. of our Treatise on Savings Banks, wherein is discussed at length the excellent plan suggested by Mr. Whitbread, M.P., in the year 1807, for granting Government assurances to the industrious classes, with regard to which an eminent writer remarks:—

"In the hands of a paternal government, life assurance on such a basis might be made a national duty. And while every one may well exclaim against a tax upon the act of insurance itself (in the case of *fire* insurance, the tax is 200 per cent,) as a disgrace to the legislation of the nineteenth century, we believe that a graduated insurance tax to do away, in the next generation, with nine-tenths of the genteel pauperism we see around us, would be much more

willingly paid than any of those now pressing on us to meet the interest, never ending, still beginning, of the cost of Blenheim and Waterloo.”

Applications of Life Assurance.

40.—The following are other instances where life assurance is peculiarly applicable:—

1. To Husbands and Fathers:—to ensure a provision, after their death, for their wives and children. (Tables 1, 2, 3, 4, pages 51 and 52.)
2. To Young Men:—to make provision for *their old age* by the purchase of deferred annuities.
3. To Parents:—to ensure certain sums payable on their children *attaining* the age of 14 or 21, or at other ages, whereby the ready means for *starting them in life* may be obtained by a much smaller annual saving, than would be necessary were they to attempt to realize the same sum by putting it in any other species of investment; Assurance companies charging a smaller sum, as they take into account the chance of the child's dying before attaining the age agreed. This kind of assurance is called an 'endowment,' and can be effected by one single payment, or by a series of annual payments, or premiums, to be made until the specified age.
4. To Partners in firms:—*who, by assuring their joint lives on Table 4, page 52, can secure a sum payable at the death of the first, which will enable the surviving partner to pay off the claims of the Widow of the deceased upon the firm.*
5. To Minors, and to the Guardians or Friends of a person, who at a certain age will come into the possession of property:—to obtain security for advances made in the interim, by assuring his life until he shall arrive at the given age.
6. In the case of Post obits:—persons having issued *post*

obit bonds may realize their amount at the time they become payable, by insuring the life or lives on whose failure they depend.

7. To secure *a return* for the outlay made in educating *and* establishing in the world *the younger members of a family*:—by assuring *the lives of the children respectively*, so that, should they die young, the parent may recover from the Assurance Company the money spent upon their education; but should they continue to live, he would be able to present them with policies of a certain standing and consequent value, which might be continued in the usual way, and the annual premium upon which would be small, in consequence of their having been taken up at an early age.
8. To creditors, who, by* assuring the amount due to them, can obtain, at a trifling cost, a compensation for the loss which the death of their debtor might occasion. By the principle set forth in the note to Art. 9, p. 12, the policy might be fully secured, even should the creditor die during the lifetime of the debtor.
9. To Borrowers:—to provide, in case of death, a sum to repay the loan. This is the usual way in which money is now borrowed on personal security. The borrower, say of £500, assures his life for £1000, and gives personal security, in the shape of three joint sureties with himself, for the repayment of the principal and the due payment annually of the interest at £5 per cent. on the money borrowed, with the premiums of the assurance.
10. To Possessors of Entailed Estates:—*who can bequeath provisions for the younger members of their families, by assuring suitable amounts on their own lives.* This is

* [Care should be taken in framing the security, as conflicting decisions have been given. (*Brown v. Price*, 27 L.J. 290, C.P.; *Earl Fitzwilliam v. Price*, 4 Jur., N. S., 890, Ch.) As to the position of the assignee in cases of insolvency, see *Re Storie's Trust*, 28 L.J., 888, Ch.]

applicable to the nobleman who desires to leave his property intact for his immediate heir, and yet provide for the younger branches of his family by a proportionate economy in his establishment; thus remedying in one respect, the defects of the law of entail. Many *noblemen and gentlemen of large hereditary estates* have effected assurances with this view, and some adopt the salutary rule of making *an additional insurance upon the birth of every child*. To persons of rank who make a reserve from their revenue as a future provision for their dependants, life insurance is very useful, if only upon the consideration that it produces an effectual improvement of their money, which they are unlikely to be able to accomplish so well themselves.

11. To the Expectants of property in Reversion: to secure a portion, at least, to their families, should they die before they themselves enter into possession. The contingency being one of *survivorship* only (See *Table 5*) the payments required would be but small. For example;—A gentleman, aged thirty-five, entitled to property should he survive another, aged sixty-five, can assure £1000, to be receivable by his family should he die before the older life, by a payment of £14 19s. 2d. a year.
12. To those who expect to receive sums of money should they live over a *certain* number of years, as for example:—A person aged 30, is entitled to a share amounting to £1000 in the *Renewal Fine of a Lease*, which is payable at the expiration of three years from the present time. This share he would lose, should he die within that period. To secure his family against that loss, he has only to take out a *temporary* policy of assurance on his life for the three years, and by the trifling annual payment of about £12 he assures the £1000. Should he die before the end of the three years, the office will pay his family the £1000, and should he live, he will come into his share of the fine; so that he is in

either contingency rendered safe from loss. (See *Table 3.*)

13. To parties having shares in Building societies *upon which they have obtained loans.* *Example:—A young man borrows £300 from a building society, to be repaid by monthly instalments during ten years, at the rate of, say, £42 a year. The money borrowed is invested in the purchase of a house, which is mortgaged to the society as security until the loan is repaid. Now, if he die before the ten years are expired, unless his family can continue to pay the monthly instalments, the house will be seized for the remainder of the debt unpaid. It is obvious, then, that the borrower ought to take out a policy of assurance on his own life, so that his family may be able, in the case of his death, to pay off the loan. He can effect this object with great facility, according to the plans explained with the Benefit Building society tables (page 55).*

14. The Holder of a Lease, (whether for a *term certain*, or contingent on the existence of *one, two, or three lives*), which is renewable on payment of a certain fine, can, by a trifling annual premium, assure the necessary sum.

In Leases depending on lives, on the failure of a life, the lease can generally be renewed by putting in another life, for which privilege a *Fine* is demanded. From the uncertainty of human life, the lessee is exposed to the chance of being called upon for such payment at a time when he may not be prepared to meet it (or before he has put by the amount of the fine). This is a circumstance often arising, and productive of serious loss. There can be, therefore, no safer way to provide the money for the *Fine*, than by effecting a policy of assurance for the amount to be received at the death of the *first* or *last* of the lives, as the case may be. *Example:—The holder of a lease would have to pay a*

fine of £100, to renew it at the death of the *first* of two lives aged (say) fifteen and thirty-five. He provides for its payment by an annual premium of £3. 8s. 8d., so that, should any one of the lives in the lease die even the day after the first premium has been paid, he would receive from the assurance society £100 (See *Table 4*, p. 52).

Not only in reference to renewal, however, is life assurance an advantage to leaseholders, but there are cases where, though it is intended to allow the lease to run out, it would be desirable to have in possession, at the termination of it, a sum of money which would be an equivalent or compensation for the loss of the lease. In such a case it is only necessary to effect an assurance for the amount, to be received when all the lives in the lease in question are dead.

If the lease be on *three* lives, the annual premium per cent. would be very trifling. Example:—£100 can be assured payable at the death of the *last* of three lives, aged, say, thirty-one, thirty-seven, and sixty-one, respectively, by the annual payment of £1. 5s. 6d.—For younger lives the premiums would of course be less.

15. In most copyhold properties, on the death of the tenant his successor cannot be admitted *except* on payment of a fine, in addition to the steward's fees and the other expenses connected with entries on the Court Roll. In many instances, the sudden death of the tenant has put his successor to great difficulty in meeting these claims: but an assurance effected on the life of a tenant, by himself or his successor, would provide for them by a small annual outlay. (See *Tables 1 & 2*, p. 51.)
16. In cases of Marriage Settlement, also, life assurance may be particularly advantageous.—Suppose a gentleman, twenty-six years of age next birth-day, be engaged to a lady whose fortune is £3500, and that the whole be

required to be settled on her at her marriage, as a provision for herself and children after death, at the same time, that it is deemed advantageous to give the husband the use of a portion of the money to promote his profession or business. Let £1000 be vested in trustees, and with the annual interest at £5 per cent. let them insure £2500 on the life of the husband. The remaining £2500 can be then placed at his command at once, as, at his death, his wife will still come into possession of £3500. (See *Tables 1 and 2.*)

41.—*The following Tables will serve as Illustrations of the Subject.*

TABLE I.

ANNUAL PREMIUM for ASSURING £100
on a Single Life, for the whole
continuance thereof, without
Profits.

Age next Birth- day.	Premium.			Age next Birth- day.	Premium.		
	£.	s.	d.		£.	s.	d.
16	1	11	2	39	2	17	8
17	1	11	11	40	2	19	6
18	1	12	7	41	3	1	4
19	1	13	5	42	3	3	1
20	1	14	2	43	3	5	0
21	1	15	0	44	3	7	0
22	1	15	11	45	3	9	1
23	1	16	10	46	3	11	5
24	1	17	10	47	3	13	11
25	1	18	11	48	3	16	8
26	2	0	0	49	3	19	9
27	2	1	3	50	4	3	3
28	2	2	5	51	4	7	1
29	2	3	7	52	4	11	3
30	2	4	8	53	4	15	7
31	2	5	9	54	5	0	3
32	2	6	11	55	5	5	4
33	2	8	3	56	5	10	9
34	2	9	7	57	5	16	8
35*	2	11	0	58	6	2	10
36	2	12	7	59	6	9	1
37	2	14	3	60	6	15	3
38	2	15	11				

TABLE II.

ANNUAL PREMIUM for ASSURING
£100 on a Single Life, for the
whole continuance thereof, with
Profits.

Age next Birth- day.	Premium.			Age next Birth- day.	Premium.		
	£.	s.	d.		£.	s.	d.
16	1	14	4	39	3	3	5
17	1	15	1	40	3	5	6
18	1	15	11	41	3	7	8
19	1	16	10	42	3	9	11
20	1	17	9	43	3	12	3
21	1	18	7	44	3	14	1
22	1	19	7	45	3	17	2
23	2	0	6	46	3	19	10
24	2	1	6	47	4	2	10
25	2	2	7	48	4	6	3
26	2	3	9	49	4	9	1
27	2	4	10	50	4	12	0
28	2	6	0	51	4	15	4
29	2	7	4	52	4	18	4
30	2	8	6	53	5	1	6
31	2	9	10	54	5	4	8
32	2	11	4	55	5	11	2
33	2	12	10	56	5	17	8
34	2	14	5	57	6	4	2
35†	2	15	11	58	6	10	9
36	2	17	8	59	6	17	4
37	2	19	5	60	7	3	11
38	3	1	4				

* EXAMPLE:—A person whose age is 35 next birth-day may assure the FIXED sum of £100, to be paid at his death, by an annual payment during his life of £2. 11s. 0d.

† EXAMPLE:—A person whose age is 35 next birth-day, may assure £100 with the profits that shall accrue, to be paid at his death, by an annual payment during his life of £2. 15s. 11d.

TABLE III.
ANNUAL PREMIUMS for ASSURING £100 on a Single Life for One Year and for Seven Years.

Age next Birth-day.	Premium One Year.			Premium Seven Years.			Age next Birth-day.	Premium One Year.			Premium Seven Years.			Age next Birth-day.	Premium One Year.			Premium Seven Years.		
	£.	s.	d.	£.	s.	d.		£.	s.	d.	£.	s.	d.		£.	s.	d.	£.	s.	d.
16	0	17	1	0	18	4	31	1	4	11	1	6	10	46	1	17	1	2	0	0
17	0	17	6	0	18	10	32	1	5	7	1	7	7	47	1	18	1	2	1	6
18	0	17	11	0	19	3	33	1	6	3	1	8	4	48	1	19	1	2	3	4
19	0	18	5	0	19	9	34	1	7	0	1	9	1	49	2	0	2	2	5	8
20	0	18	10	1	0	3	35	1	7	8	1	9	10	50	2	1	6	2	8	4
21	0	19	4	1	0	9	36	1	8	5	1	10	8	51	2	3	0	2	11	4
22	0	19	10	1	1	4	37	1	9	2	1	11	5	52	2	4	10	2	14	10
23	1	0	4	1	1	10	38	1	10	0	1	12	4	53	2	7	2	2	18	8
24	1	0	10	1	2	5	39	1	10	9	1	13	2	54	2	10	2	3	2	11
25	1	1	5	1	3	0	40	*1	11	7	1	14	1	55	2	14	0	3	7	7
26	1	1	11	1	3	7	41	1	12	5	1	15	0	56	2	18	10	3	12	5
27	1	2	6	1	4	3	42	1	13	4	1	15	11	57	3	3	3	3	17	10
28	1	3	1	1	4	10	43	1	14	2	1	16	11	58	3	8	0	4	3	8
29	1	3	8	1	5	6	44	1	15	2	1	17	11	59	3	13	2	4	9	11
30	1	4	4	1	6	2	45	1	16	1	1	18	11	60	3	18	10	4	16	7

* EXAMPLE:—A person whose age is 40 next birth-day, may assure £100 for one year, by the payment of £1. 11s. 7d.; and for seven years by annual payments of £1. 14s. 1d.

TABLE IV.
ANNUAL PREMIUMS payable during the Joint Lives of Two Persons, for ASSURING £100, to be paid on the Death which shall first happen of the said Two Lives.

Ages.		Premium.			Ages.		Premium.			Ages.		Premium.		
A.	B.	£.	s.	d.	A.	B.	£.	s.	d.	A.	B.	£.	s.	d.
15	15	2	12	6	25	30	3	8	9	40	40	4	12	6
...	20	2	15	7	...	35	3	13	7	...	45	5	0	1
...	25	2	19	4	...	40	4	0	0	...	50	5	11	7
...	30	3	3	3	...	45	4	8	8	...	55	6	8	5
...	35	3	8	8	...	50	5	1	6	...	60	7	12	6
...	40	3	15	10	...	55	5	19	0	45	45	5	6	8
...	45	4	4	10	...	60	7	3	10	...	50	5	17	8
...	50	4	17	8	30	30	3	12	4	...	55	6	13	9
...	55	5	15	6	...	35	3	16	10	...	60	7	17	0
...	60	7	0	7	...	40	4	3	5	50	50	6	7	6
20	20	2	18	6	...	45	4	11	9	...	55	7	2	10
...	25	3	1	11	...	50	5	4	0	...	60	8	5	4
...	30	3	5	8	...	55	6	1	8	55	55	7	16	6
...	35	3	10	2	...	60	7	6	4	...	60	8	18	10
...	40	3	17	0	35	35	4	0	10	60	60	9	17	10
...	45	4	5	10	...	40	4	7	0					
...	50	4	18	9	...	45	4	15	0					
...	55	5	16	7	...	50	5	7	1					
...	60	7	1	3	...	55	6	4	4					
*25	25	3	5	2	...	60	7	8	10					

* EXAMPLE:—£100, together with the profits accruing, may be Assured to be received on the death of EITHER of two persons, aged 25 and 25 respectively, by an annual payment of £3. 5s. 2d.

SURVIVORSHIPS.—TABLE V.

ANNUAL PREMIUMS payable during the Joint Lives of Two Persons, A and B, for an ASSURANCE of £100, payable on the death of A, provided B shall be then living, without Profits.

Age of		Annual Premium.			Age of		Annual Premium.			Age of		Annual Premium.			Age of		Annual Premium.		
A.	B.	£.	s.	d.	A.	B.	£.	s.	d.	A.	B.	£.	s.	d.	A.	B.	£.	s.	d.
15	15	1	6	3	25	75	1	2	0	40	60	1	16	9	55	40	4	9	6
...	20	1	5	3	...	80	1	1	1	...	65	1	14	4	...	45	4	5	11
...	25	1	4	2	...	...	...	...	...	...	70	1	12	7	...	50	4	3	8
...	30	1	3	3	*30	15	2	0	0	...	75	1	11	0	...	55	3	18	3
...	35	1	2	5	...	20	1	18	9	...	80	1	9	8	...	60	3	13	7
...	40	1	1	9	...	25	1	17	5	...	...	...	...	...	...	65	3	8	10
...	45	1	1	0	...	30	1	16	2	45	15	3	3	10	...	70	3	4	3
...	50	1	0	3	...	35	1	15	0	...	20	3	2	1	...	75	3	1	8
...	55	0	19	5	...	40	1	13	8	...	25	3	0	11	...	80	2	19	5
...	60	0	18	11	...	45	1	12	3	...	30	2	19	6	...	...	...	...	...
...	65	0	18	5	...	50	*1	10	10	...	35	2	18	1	60	15	6	1	8
...	70	0	17	10	...	55	1	9	5	...	40	2	15	5	...	20	6	0	1
...	75	0	17	6	...	60	1	8	2	...	45	2	13	4	...	25	5	19	2
...	80	0	17	1	...	65	1	7	0	...	50	2	10	8	...	30	5	18	2
...	...	...	...	...	...	70	1	6	0	...	55	2	7	10	...	35	5	17	3
20	15	1	10	4	...	75	1	5	5	...	60	2	4	8	...	40	5	15	9
...	20	1	9	3	...	80	1	4	5	...	65	2	1	4	...	45	5	12	4
...	25	1	8	1	...	...	...	...	...	...	70	1	18	3	...	50	5	10	5
...	30	1	6	11	35	15	2	6	3	...	75	1	15	10	...	55	5	5	3
...	35	1	5	9	...	20	2	4	5	...	80	1	13	11	...	60	4	18	11
...	40	1	4	10	...	25	2	3	3	...	...	...	...	...	...	65	4	12	5
...	45	1	3	9	...	30	2	1	10	50	15	3	17	5	...	70	4	6	5
...	50	1	2	11	...	35	2	0	5	...	20	3	15	10	...	75	4	4	9
...	55	1	2	1	...	40	1	18	6	...	25	3	14	11	...	80	4	2	7
...	60	1	1	2	...	45	1	16	11	...	30	3	13	2	...	...	...	...	...
...	65	1	0	6	...	50	1	15	4	...	35	3	11	9	65	15	7	14	1
...	70	0	19	8	...	55	1	13	8	...	40	3	10	1	...	20	7	12	10
...	75	0	19	0	...	60	1	11	7	...	45	3	7	0	...	25	7	12	0
...	80	0	18	2	...	65	1	9	11	...	50	3	3	9	...	30	7	10	11
...	...	...	...	...	...	70	1	9	5	...	55	2	19	2	...	35	7	10	2
25	15	1	15	2	...	75	1	6	10	...	60	2	14	11	...	40	7	9	1
...	20	1	13	10	...	80	1	5	11	...	65	2	11	1	...	45	7	5	11
...	25	1	12	7	...	...	...	...	...	...	70	2	7	0	...	50	7	3	10
...	30	1	11	4	40	15	2	14	1	...	75	2	4	5	...	55	6	18	4
...	35	1	10	4	...	20	2	12	2	...	80	2	1	0	...	60	6	14	2
...	40	1	9	1	...	25	2	10	11	...	...	...	...	...	...	65	6	3	4
...	45	1	7	9	...	30	2	9	9	55	15	4	16	1	...	70	5	19	0
...	50	1	6	7	...	35	2	8	6	...	20	4	14	6	...	75	5	15	0
...	55	1	5	7	...	40	2	6	3	...	25	4	13	5	...	80	5	10	10
...	60	1	4	8	...	45	2	4	8	...	30	4	12	3	...	...	...	...	...
...	65	1	3	10	...	50	2	1	6	...	35	4	10	8	...	...	...	...	...
...	70	1	2	10	...	55	1	18	11	...	...	...	...	...	...	...	...	...	...

* EXAMPLE:—The sum of £100 may be assured, payable on the death of a person aged 30 next birth-day, provided a party aged 50 last birth-day shall survive him, by the payment of £1. 10s. 10d. annually, only so long as both Lives shall continue.

By means of this Table, a person having a contingent life interest, depending on survivorship, may secure the certain benefit of it to his family, by a small annual payment.

42.—*Amount of immediate annuity granted for every £100 paid down.*

TABLE VI.

Age LAST Birth- day.	(1) Male.			(2) Female.			Age LAST Birth- day.	(1) Male.			(2) Female.		
	£.	s.	d.	£.	s.	d.		£.	s.	d.	£.	s.	d.
25	6	0	0	5	11	4	59	9	11	0	8	3	4
30	6	3	2	5	14	5	60	9	15	10	8	7	11
35	6	7	8	5	18	3	61	10	1	0	8	12	11
40	6	14	6	6	2	11	62	10	6	8	8	18	5
41	6	16	2	6	4	1	63	10	12	11	9	4	4
42	6	18	0	6	5	4	64	10	19	9	9	10	9
43	7	0	0	6	6	8	65	11	7	4	9	17	8
44	7	2	2	6	8	1	66	11	15	8	10	5	0
45	7	4	5	6	9	7	67	12	4	11	10	12	10
46	7	6	9	6	10	8	68	12	15	1	11	1	2
47	7	9	0	6	11	11	69	13	6	4	11	10	1
48	7	11	5	6	13	3	70	13	18	8	11	19	7
49	7	14	0	6	14	9	71	14	12	1	12	9	9
50	7	16	10	6	16	4	72	15	6	10	13	0	8
51	7	19	10	6	18	1	73	16	3	1	13	12	4
52	8	3	0	7	0	1	74	17	0	11	14	4	9
53	8	6	4	7	2	5	75	18	0	6	14	18	1
54	8	9	10	7	5	0	76	19	1	11	15	12	3
55	8	13	6	7	7	10	77	20	5	3	16	7	5
56	8	17	4	7	11	4	78	21	10	8	17	3	6
57	9	1	9	7	15	1	79	22	18	4	18	0	7
58	9	6	4	7	19	1	80	24	8	4	18	18	9

The following advantages can be offered to purchasers of annuities :—

1. The annuities to be payable in two equal half-yearly sums, the first payment being made to the annuitant at *the end of six months* after the purchase of the annuity.
2. A person, purchasing an annuity and whose age is more than six months from his *last* birth-day, can receive an annuity equal to the mean between the rates granted at his age *last* birth-day and *next* birth-day respectively.

43.—Many persons are averse to purchasing annuities, because, according to the *old system*, the money once invested in a company is *sunk for ever*. Two other improvements can be adopted ; viz :—

1. Should the purchaser, after three years have elapsed from the date of his annuity, desire to *obtain a loan*, for temporary purposes, the Directors can at any time make him an advance on the security of the annuity deed, deposited in the hands of the society until the loan is repaid; an assurance for the requisite amount being effected on the life.
2. Or:—If, from a change of circumstances, the purchaser, after three years have elapsed, desire to *dispose of the annuity*, the society can re-purchase it of him on equitable terms, determined by the length of time the annuity has been in existence, and the state of health of the annuitant, at the time the annuity is offered for sale to the society.

Assurance for Borrowers in Building Societies.

44.—*The attention of shareholders in Benefit Building Societies and Freehold Land Societies, should be directed to the plans of assurance, which are peculiarly applicable to the circumstances of those who have obtained loans from such institutions.*

The high estimation in which *Benefit Building Societies* are now held by the industrious and provident public, and the very great number of persons who avail themselves of them for the purpose of borrowing sufficient money to complete the purchase of a house, or other similar investment, render it desirable that every means should be provided to secure the families of the borrowers from the inconvenience and loss, that would arise from their sudden death; since it is obvious, that although a man may during his life be able, with ease, to pay the monthly or quarterly instalments necessary for the liquidation of his debt, yet, should he die before the house is free from the mortgage, his family would, in most cases, find it a very heavy burden to continue the payments, without which the house would, probably, have to be sold at considerable loss.

Now, although it is certain that some Building Societies

will not be able, consistently with the Act of Parliament, to terminate within the period specified in their prospectus, in consequence of the shares not having attained the necessary value ; yet there can be little doubt that in societies established on the sound system of permanence, where the payments are regulated by strict mathematical principles of interest, and the affairs are managed with judgment, the intended term of the mortgage would not, by any chance, be exceeded.

With a view, therefore, to give the Borrower in a Building Society the means of securing his family, by a comparatively small annual outlay, from the pressure of debt, in case of his premature decease:—*Temporary policies of assurance can be effected on the life of the borrower, in amount equal to the loan, and for the number of years it has to run, upon this principle, viz:—that, at the end of each year, the assurer shall be allowed to drop so much of his policy as is equivalent to the portion of the debt cleared off in the year, and pay, consequently, each year, a diminishing premium ; with the further advantage that, at the end of each year, a portion of the premiums, which have been paid on the dropped part of the policy (consistent with the risk incurred), shall be returned to the assurer.*

By a policy of this nature, the family of a borrower would be sure of receiving from the Assurance Company, in case of his death at any time, a sum in *ready money* which would suffice to pay off the remainder of the debt to the Building Society.

SPECIMEN OF RATES.

Annual premiums to assure £100 by a temporary policy.

Age.	For One Year.	Seven Years.	Ten Years.	Fourteen Years.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
20	0 18 10	1 0 3	1 1 3	1 2 7
30	1 4 4	1 6 2	1 7 8	1 9 6
40	1 11 7	1 14 1	1 16 7	1 18 10

45.—*In some cases, especially in the later years of the existence of a (terminating) Benefit Building Society, the family of the borrower might possibly find the society unwilling to allow them to pay off the remainder of the mortgage, by a single sum, in consequence of the probable difficulty the building society would experience in obtaining a re-investment for the money at the rate of interest supposed in their calculations. Should that be likely, another policy is recommended, by which, in consideration of a fixed diminishing annual premium paid by the borrower, the life assurance society will undertake to pay (should he die prematurely) the monthly instalments, for which the house or property is liable, until the mortgage be cleared off. This policy, called the Guarantee Temporary Annuity Policy, presents peculiar advantages, as it affords additional security to the Building Society, and at the same time entirely frees the family of the borrower from the liability.*

SPECIMEN OF TABLES.

GUARANTEE POLICY FOR FOURTEEN YEARS, by which an Annuity of £6 a-year, or 10s. a month is purchased, payable from the time of the death of the Assured, until the expiration of the fourteen years.

Diminishing Annual Premium.	Age at entry Twenty.			Age at entry Thirty.			Age at entry Forty.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
1st year.	0	14	0	0	18	9	1	4	6
2nd "	0	13	3	0	17	9	1	3	2
3rd "	0	12	6	0	16	8	1	1	9
4th "	0	11	7	0	15	7	1	0	3
5th "	0	10	9	0	14	5	0	18	10
6th "	0	9	11	0	13	3	0	17	3
7th "	0	9	0	0	12	0	0	15	7
8th "	0	8	0	0	10	8	0	13	11
9th "	0	7	0	0	9	4	0	12	2
10th "	0	5	11	0	7	11	0	10	4
11th "	0	4	10	0	6	6	0	8	5
12th "	0	3	9	0	5	0	0	6	6
13th "	0	2	6	0	3	5	0	4	5
14th "	0	1	4	0	1	9	0	2	3

GUARANTEE POLICY FOR TEN YEARS, by which an Annuity of £8. 8s. a-year, or 14s. a month, is purchased, payable from the time of the death of the Assured, until the expiration of the ten years.

Diminishing Annual Premium.	Age at entry Twenty.			Age at entry Thirty.			Age at entry Forty.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
1st year	0	14	2	1	0	0	1	5	7
2nd "	0	13	0	0	17	5	1	3	5
3rd "	0	11	10	0	15	10	1	1	3
4th "	0	10	6	0	14	1	0	18	11
5th "	0	9	2	0	12	4	0	16	6
6th "	0	7	10	0	10	5	0	14	0
7th "	0	6	5	0	8	7	0	11	6
8th "	0	4	11	0	6	6	0	8	9
9th "	0	3	4	0	4	5	0	6	0
10th "	0	1	8	0	2	3	0	3	1

Example:—Suppose a member, aged 30, borrows £300, in order to purchase a house, at the commencement of a building society, which is calculated to close in 10 years, and whose shares are £120. He requires for this loan five shares, since £60 is the present value of the £120, and has to pay 14s. monthly per share, or £8. 8s. per year during the ten years, which, for the £300 loan, necessitates an annual payment of £42.

Now, if the borrower die before the ten years are expired, the house is liable to be seized for the remainder of the mortgage unpaid, unless his family can continue the monthly instalments ;—but if he effect, at the same time with his loan, a temporary policy on his own life for ten years, securing the annuity of £42 a year, or £3. 10s. monthly, payable in case of his death, after that event until the expiration of the ten years, his family is rendered free from any liability by a comparatively small annual outlay, which is as follows: viz.—

	£.	s.	d.
1st year's payment	5	0	0
2nd " 	4	7	1
3rd " 	3	19	2

	£.	s	d.
4th year's payment.....	3	10	5
5th „	3	1	8
6th „	2	12	1
7th „	2	2	11
8th „	1	12	6
9th „	1	2	1
10th „	0	11	3

From this it is seen that if, for example, the party die in the 4th year, he will have purchased an annuity of £42 a year, for six years, by four payments amounting to £16. 16s. 8d.

It is evident the principle of such assurances is the same whether the payments of the building society are 10s. a month during fourteen years, or any other amount; and it matters not whether the loan be effected at the commencement, or in any other year of the existence of a building society. All that a borrower has to consider is the amount of his mortgage, and the number of years he expects it will run over; with these facts he can go to an assurance society, and be informed what premium and what amount of policy will suit his purpose.

46.—The guarantee annuity policy might be purchased by *equal* in lieu of *decreasing* annual payments, which would be nearly corresponding to the average of the rates above given; but, for the reasons assigned in Art. 195, of the “Treatise on Industrial Investment and Emigration,” the payment of equal premiums should only begin at the second year.

47.—To resume, we concur with Mr. De Morgan, that the “theory of insurance, with its kindred science of annuities, deserves the attention of the academical bodies. Stripped of its technical terms and its commercial associations, it may be presented in a point of view which will give it strong moral claim to notice. Though based upon self-interest, it is the most enlightened and benevolent form which the projects of self-interest ever took. It is, in fact, in a limited sense

and by a practicable method, the agreement of a community to consider the good of its individual members as common. It is an agreement that those, whose fortune it shall be to have more than average success, shall resign the overplus in favour of those who have less. And though, as yet, it has only been applied to the reparation of the evils arising from storm, fire, premature death, disease, old age, (and dishonesty), yet there is no placing a limit to the extensions which its application might receive, if the public were fully aware of its principles, and of the safety with which they may be put in practice."

The foundation of every species of Assurance is the experience of the laws of average, and the object of every application of the principle is to secure the benefit of the average to the individual. Hence, while nothing is more uncertain than the duration of an individual life, nothing, it would appear, is more certain than the average life of a generation. In the same age, and in the same country, it is true, the rate of mortality may be affected by epidemics, scarcity of food, and other causes, but these influences are speedily counterbalanced: an intense vitality seems to succeed these periods of death, and the aberrations from the recorded laws of mortality of one period, are the measure of the counter-aberrations which mark the period following.

48.—The safety of a society, professing to assure its members against the loss attending any contingency, requires either that the number of its members be so large as to provide for all possible aberrations in the law by which the occurrence of the assured contingency is supposed to be regulated, or, that a protective capital be paid up, or ready at call, to secure the society from inconvenience or chance of failure. In general such a capital is rarely paid up but in part, and the protection consists mainly of the personal security of a number of shareholders collectively making themselves answer-

able for the engagements of the society. Eminent writers, arguing from the difficulty which the older companies, with immense paid-up capitals, have experienced in making good interest for their money, have, by too hasty generalization, imbued the minds of directors with a most mischievous tendency to neglect providing a sufficiency of paid-up capital in the establishment of new societies.

Such sentences as the following have been perverted by promoters, as an excuse for starting, recklessly, new institutions with scarcely more funds than would defray preliminary expenses. For example, the judicious writer already quoted says:—

“It may be taken as granted that an office charging premiums,* such as are commonly demanded, managed with prudence and economy, and successful in obtaining business, will not need any capital at all: firstly, because the premiums are such as must, in the long run, realise a profit after paying the expenses of management; so that the only use of the capital would be as a provision against extraordinary temporary fluctuations:—secondly, because a sufficient supply of business renders the probability of ruinous fluctuations extremely small, and altogether beneath consideration. Now, since it is well known that the premiums are sufficient, it follows that the only need which a commencing insurance has of capital is for safeguard against the early expenses of management, and against failure of business. The risk, however, at the commencement is not great in character, and small in amount; and the quantity of risk diminishes so much faster than the amount increases, that it may safely be

* [Again he says:—“If the premiums were really too low, capital would be an injury, and not a benefit, for since this capital is really paid for, in whole or in part, out of premiums, it would not preserve the office from insolvency, but would rather accelerate its progress towards bankruptcy.” In a Mutual Assurance Society, however, the policy holders are liable for the whole of the debts, and in a recent case, calls of large amount were made. 7 & 8 Vict. c. 110, ss. 3, 66; *Stevens v. Security Mutual Assurance*, 28 L.T. 250, Q.B.]

said there is nothing in the commercial world which approaches, even remotely, to the security of a well-established and prudently managed insurance office."

In the present day it is very difficult to procure for a new office a large capital, but in cases where it is proposed to insure some new and untried contingency, a sufficient paid-up capital is essential. It is well known, that whatever pains may be taken in such a case to procure facts and deduce proper tables, there is always the danger that the actual resulting experience may be at variance with the data originally employed. For example, when general conclusions drawn from the mortality of certain towns were first applied to the insurance of life, it was a risk that could not then be estimated whether the lives upon which assurances were to be effected would be better or worse than those from which the tables were made. The result has happened to be in favour of the offices; but in other speculations, of like kind, the same species of risk might prove to be against them.

49.—For the well working of a new society it is requisite, therefore, that sufficient capital be* *paid up* to defray expenses and contingencies for, at least, seven years; so that no delay or inconvenience may arise to check the business, from difficulty in making calls on the proprietors; but as, after a sufficient revolution of time, an assurance business will protect itself, provision should be reserved in the deed of settlement to remove the incumbrance of the capital by returning it to the holders as soon as the state of the society's affairs will permit. This could be done very gradually and by inconsiderable withdrawals from the society's assets, if the capital, say, after fifteen years, were liquidated by a long annuity for some

* [To remedy deficiencies of capital, a very general movement has recently prevailed among Assurance Companies for effecting Amalgamations of the business of two or more institutions.—(See Preliminary Remarks, p. xxxi.) As to how far the concurrence of Policy holders is necessary, see *King v. Accumulative Assurance*, 3 C.B., (N.S.) 151: 30 L.T. 119, C.P.]

twenty years, calculated so as to give back not only principal and interest, but a bonus for the risk they have incurred.

50.—An excellent form of Protective or Guarantee capital for a new assurance society is suggested by the **Tontine* principle. The capital to consist of paid-up shares held on the lives of nominees, and bearing dividends of interest and bonus payable every five years among the surviving stock-holders, the gross capital, and any increase from Reserve Bonus, going to the survivor; or, *by the Redemption Tontine* plan, if the capital and the dividends were accumulated for ten years from the commencement of a society, and then liquidated by a long annuity to last until all the nominees were dead, and divisible equally among the survivors; thus, while the society was flourishing, the shareholders would be increasing in income.

One of the principal objections to Tontines of the ordinary form is, that the subscribers are always uncertain what income they may derive from them in any future year. Euler suggested a plan, however, upon which that and other objections might be obviated, while all the advantages of the scheme could be preserved.†

* [See Division 2 of this Treatise ("Industrial Investment and Emigration,") for an account of Tontines, and the profits attending that system. St. Cyran states that "Suivant l'opinion commune c'est a Laurent Tonti, Napolitain, que nous sommes redevables de cette invention ingénieuse et utile; l'auteur la fit connoître en France vers l'an 1663; mais l'établissement de la premiere Tontine n'eut lieu qu'en 1689, et elle fut suivie de celle du 1696: une classe de ces deux Tontines s'éteignit en 1726 par la mort de la femme d'un Barbier, âgé de quatre-vingt-seize ans, qui, moyennant 300 livres s'était interressée dans ces deux classes, et qui lors de sa mort jouissait de 73,500 livres de rente." St. Cyran, *Calcul des rentes, premiere partie*, page 32.]

† ["*Eclaircissements sur les établissements publics en faveur tant des veuves que des morts, avec la description d'une nouvelle espèce de Tontine aussi favorable au public qu'utile à l'Etat, calculée sous la direction de Monsieur Leonard Euler par Mr. Nicholas Fuss, à St. Petersburg in 4to.*" This copy is referred to by Mr. Milne and was without date. In the *Göttliche Ordnung* of *Sussmilch*, it is stated to have been published in 1775. T. iii. s. 470, edit. 1798 being that which is always quoted in his work. *Montucla* states the date to be 1781, and the size 8vo. (*Histoire des Mathematiques*. T. iii, page 423), but, in one of the statements, probably in both, Mr. Milne considers that *Montucla* was in error.]

Euler assumed that the state, which borrows, repays to the subscriber the interest only of the loan, so long as any of the nominees survive, and enjoys the absolute reversion of the principal after the decease of the longest liver of them ; which is not equitable. But the principle upon which he calculated is very simple, and is easily adapted to the payment of the annuity, that shall discharge the whole debt with interest during the life of the last surviving nominee.

The late Mr. Milne remarks that as the nominees in such cases must be expected to be the very best of lives that can be chosen—persons whose situations and habits are favourable to longevity, and often such as are descended from long-lived ancestors—it would be prudent to assume that some of them will reach the age of 105 years. On this assumption, and that the law of mortality among them will be such as is represented in the Carlisle Table, the following will be the result of the calculation (taking interest at 5 per cent., and the member to be 40 years of age at the time of nomination):—

Upon the Nominee attaining to the Age of	The Annuity for every £100 subscribed would be		
45	£5	12	1
50	6	0	6
55	6	10	1
60	7	5	5
65	8	15	6
70	11	0	8
75	15	16	3
80	27	15	10
85	59	10	5
90	186	10	5
95	882	17	4
100	2942	18	0
101	3783	14	0
102	5297	4	0
103	8828	13	4
104	26486	0	0

Hence it is easy to see nearly, what sum will be payable at the expiration of any year not inserted above. Tables of this kind may also be useful in showing subscribers to Tontines in the ordinary way, what they may reasonably expect from them.

The Moral Urgency of Life Assurance.

51.—The preceding articles will probably have sufficiently shewn that the benefits are considerable, which are derived, even as a mere matter of investment, from the application of the life assurance principle; and a few words may be suffered on its Moral urgency, which alone affords earnest reasons why the system should be more extensively adopted.

It is needless to insist on that primary duty, which bids every man, both as a father and a husband, to promote the well-doing of his family, whilst he is alive to watch over them. With the exception of a solitary few, all men are conscious of its vital importance. It is a natural instinct or affection, intimately bound up with our existence, and often a source of intense pleasure. What we have rather to complain of, as deficient not in degree merely, but too frequently altogether, is that, perhaps, even more binding duty of providing for the *future* welfare of families. Of the uncertainty of life we need not say anything; for, notwithstanding the incredulity of some men in respect to themselves, the *Bills of mortality* bear unerring testimony to the possible destruction of their hopes. And how many families are dependent entirely upon the income of a parent. How many have been thrown into irretrievable confusion by his sudden indisposition;—Or, still oftener, how frequently has his sudden death reduced them to the most abject misery, so that their bread has been “dipped into tears,” and they themselves brought “to sit on the margin of the grave.”

52.—It is true, many plans have been adopted by the more conscientious and thoughtful for the provision of their families. Perhaps they endeavoured to accumulate their savings by

depositing them at interest in a bank, or they were laid aside for the purpose of being invested in stock. But nothing could be more precarious than either of these methods. There was the apprehension of sudden sickness, or sudden death; or their savings might be interrupted by circumstances, sometimes purely accidental, sometimes lying wholly in the conduct of the parties themselves. It was not unseasonably, therefore, that the first *life assurance office* was established in England; for the advantages offered were immediate, evident, and most important. The great acquisition was this, that, instantly on effecting his assurance, or completing his first payment, however small, the individual secured the full object of his wishes; should he die at any moment after, his family would be entitled to the *whole amount assured*.

53.—But it is remarkable, that, notwithstanding the manifest increase of late years in the numbers of life assurance societies, few individuals have, as yet, embraced the great advantage, to be derived from them. It has been ascertained that, out of the very many families who are dependent entirely upon the mere *life* income of a parent or a husband,—that, in fact, out of upwards of thirty millions of people in the united kingdom,—not more than two hundred and fifty thousand persons are assured, (excepting, of course, those who are members of mere benefit clubs, which mainly provide against sickness); and a large number of the policies effected in assurance companies are taken out merely as security in matters of business, not as provisions for families. Many reasons may be, however, assigned for this startling fact. There appears to be a very great ignorance not only of the advantages which are afforded by the assurance system, but even of the very existence itself of such institutions. Even where there appears to be some knowledge, there yet exists an amount of prejudice, which under the, now considered, too strict regulations of the more ancient companies, might have been conceived, but certainly is not justified in the present day, and is altogether unworthy of these enlightened

times. There are even a small party of silly *Illuminati* who view the system as irreligious, and consider it wrong to attempt to provide against the dispensations of Providence; but the feeling, which must be most taken into account, is that highly dangerous one of self-security,* which is so common—‘all men think all men mortal but themselves’; and that equally prevalent antipathy among older people to consider such subjects as are connected with death. Doubtless this last-mentioned feeling, more than would be imagined, deters men from the assurance of their lives; they will not engage in any duty which reminds them of their end; and, ashamed of a way of thinking, at once mean and contemptible, they invent, to satisfy their consciences, all sorts of petty excuses for the evasion of it.

54.—We remember a case, which has always appeared to us a melancholy instance of the evil that may arise from the omission of the important duty which we are advocating. It is that of a young man, a clergyman;—though married, and having a family, he had still the resources of a good living, amply sufficient for the most varied requirements. To profound scholarship, and the inexhaustible riches of a fine intellect, he added all those kindlier qualities of the heart, which would make a man estimable. But his character had its dark side too; his ‘dazzling virtues’ were not more numerous than his weaknesses. With thoughtlessness and irresolution he lacked sound judgment; and it is not surprising, therefore, that he often took that course which was positively hurtful. Among other things, he had deferred, from day to day, the carrying into effect a long contemplated intention to assure his life. Being in strong health, he was not sufficiently sensible of the precarious tenure of his existence; or of the common prudence of not leaving one day between the cognizance of a duty and the fulfilment thereof. This was the more unfortunate,

* See art. 36, page 39, for remarks on the experience of assurance societies in respect to premature deaths among sound lives.

as he was destined to leave this world at a period when it is most precious ; when, for his children, all was laughter, buoyancy, and happiness. Of the solemn death-bed scene we will say nothing ; yet, perhaps, he had quitted life with more peace, had he but provided for his family.

Need we wonder that, when, in after years, ‘ the proud man’s contumely ’ had more than embittered the cold draught of poverty ;—that, when, with the thousand natural ills which flesh is heir to, came the uncertainty of a precarious and toilsome existence, hard thoughts of that man fell even from the lips of his devoted wife ? Need we wonder that, although gentle as any woman, yet she knew not how to repress at all times the murmurs of her children ? Need we add, in fine, an account of her anxious watchings, of her endless toilings, her wasting melancholy ; how she wept and struggled, struggled and wept, and, at last, was laid by the side of him, whose thoughtlessness had been the cause of all her sufferings.

55.—The picture, we have here given, is not an imaginary case nor a mere outline, distinct perhaps, yet incapable of being filled up, it is but a solitary example of a system which is loaded with evils the most palpable and pernicious :—so pernicious, that thousands upon thousands, we might say, of men’s children are daily bearing testimony to its unfortunate consequences ; but the most saddening point of reflection is, that, too frequently, the increase of their misery is in exact ratio with the extent of their merits. As they are the most virtuous and the most amiable, so does the blow of sudden change from comparative affluence to penury fall the harder ; and the more delicate the nurture of the children during the lifetime of their thoughtless parent, the more painful do they feel the pressure of their altered circumstances. How much harrowing misery might be spared to the unfortunate, if every man, as a father and a husband, were not only *conscious* of the duty which he owes to his family, but determined also to put into *practice* every expedient that might promote the exercise

of it; what a large mass of moral and physical suffering could be obviated.

56.—But it will be objected by some that the “times are bad;” and that they are ill-able to afford so considerable a sum as would be necessary for the assurance of their lives. We would reply, that, even supposing they are unable to assure for the sum of £1000, or £700, or £500,—cannot they, yet, secure £100, when this last can be obtained by the payment of little more than one shilling weekly? A life assurance society is, in truth, adapted no less for the rich nobleman, than for the tradesman; while the former may make use of its full benefits to create a provision for the younger members of his family, it need not be said how much both of benefit and of happiness may accrue to the latter in exchange for the payment of a few small sums weekly or monthly. Wives and mothers should see to it; should reflect that no delicacy of sentiment need stand in the way of that duty, by which the future welfare of their children can be so greatly affected. If unwilling to add to their expenses, or to urge the husband and father to greater efforts, let them economise from their weekly expenditure; let them lay by sums, however small, which may be appropriated to the completion of the desired object. Let those, who have but recently entered the married state, bear this in mind equally with others, who may be surrounded with a family. Let them remember, that the payments for an Assurance are so equitably graduated according to age on entry, that the earlier a man begins the discharge of this excellent duty, the less will be his future payments, and the easier the continuance of the self-imposed economy. The old man at sixty would have to pay £6. 15s. 3d. a year for the same sum which would cost but £4. 3s. 3d. a year to the man at fifty, or only £2. 4s. 8d. a year to that of thirty (see Table 1, page 51); and, where a participation in the profits of the society is purchased, instances are frequent where the allotment of Bonus, applied to the reduction of future payments, has, in policies begun when young,

almost reduced to nothing the subsequent annual cost to the assurer.

57.— All, therefore, whose incomes are wholly dependent on their personal exertions, or upon their continuing in existence, should neglect no longer to lay aside a sufficient portion, by means of which some provision may be created for the maintenance of those they may leave behind them. The wretchedness of a family, reduced from easy circumstances to a painfully necessitous condition, which even though not equivalent to starvation, may deprive the widow of the means of educating her sons and daughters; of fitting them to earn their livelihood, and to contend with the competition of numerous others in similar positions,—that wretchedness, we repeat, can be prevented by, comparatively, so small an outlay, that the abstaining from a few indulgences would give the head of the family the means of meeting it. To our mind, nothing can be more selfish than the manner in which thousands in good employment neglect altogether the facilities, which the life assurance system would afford to them. There might be some excuse for the deficiency of a provident spirit, if the only accumulation, which could be secured to a man's family, in the case of premature decease, were simply the amount of the actual savings themselves which he had put by; but, by the system of co-operation in question, he can secure not merely those savings, but the larger amount to which they would have accumulated in a long term of years.—Take the case of a man aged thirty, who lays aside £50 a-year from his income. Suppose him to die unexpectedly,—say, in three years. If his savings had been merely invested at interest, his family would receive little more than £150; but, if he had subscribed to an assurance company (the charge for which at age thirty is £2. 4s. 8d. per cent.) they would receive £2238, nearly. This example must speak for itself, but in the words of an able periodical devoted to the life assurance cause, we would add, that, ‘although in the great number of instances

in which men fail to insure their lives as a provision for their wives and children, the neglect arises from the difficulty of withdrawing from a limited income even the small sum requisite for the annual payment of premium, yet it cannot fail, to occur to every person anxious for the welfare of his family, that this very difficulty is the strongest argument that can be advanced in support of life insurance. If a man whose income arises solely from his exertions, or from any other source terminating with his existence, finds the whole of that income absorbed in sustaining his position in society, let him contemplate the dreadful situation of those who are dependent upon his labours, when cut off, by his decease, from their sole means of support. Who is there who would not abstract something from his present enjoyments in order to protect a beloved wife, and the affectionate offspring around him, from so frightful a state of dependence upon the cold charity of the world! When it is considered, indeed, by what * small increments of saving the means of insurance may be obtained, it is surprising that any instance should exist in which it is not effected—a few tavern visits less, an occasional mislaying of the key of the wine

* For example:—The weekly payment for a £25 policy at age 36, would be only 3½d.

How thoughtlessly will a working man spend 3d. a day, and yet 4l. 11s. per annum, which is equivalent, would assure to a man, aged twenty-five, the sum of 230l. whenever his death might occur. By a similar payment, a person aged forty-nine could secure to his widow or children the sum of 112l., in like manner. By a resolution to forego any useless luxury, costing 3d. a day, a young man aged 18 might secure to himself, on attaining the age of 35, one hundred pounds! By a like saving, a person aged thirty-five could in fifteen years become possessed of 62l., which same amount would have been paid to his representatives had he died at any time beforehand.—(*See Tables of Endowment Assurance.*)

A married couple, about middle age, by saving 3d. a day, could secure to the survivor of the two, upon the death of the first, upwards of £100; or they might secure to a child of five years of age, a like sum when it came of age.

An ordinary smoker consumes fully two pennyworths of tobacco per day; but the sum thus spent in a useless habit, if applied in a proper manner by a person at the age of twenty-five, would secure to him £105 on his attaining the age of sixty years or previous death.

cellar, a tight stopper in the spirit bottle, a water-side visit put off till next year, a party omitted to be given, a slight forgetfulness of the length of time a coat or a silk gown has been in wear, and a score other things of the kind, present an ample variety of sources for furnishing the small annual sum requisite to place a family in security. Many men who have a strong perception of the importance of insuring their lives, unfortunately neglect to do so from the belief that in a little time they will be in a better position to do so—next year, trade may be more brisk, or an official salary may be increased, or an old aunt may die—but next year brings with it its own necessities ; and even if it did not, what peril is encountered in the delay ? It should be borne in mind that people can only insure when they are in the most perfect state of health—a whitened tongue, or a quickened pulse, find no passport of admission to a life office ; and who shall say he is secure, for a single hour, from some derangement of system, that may bring these symptoms upon him. What anxiety must he, who is waiting for the proper moment to insure, sustain at every incipient approach of illness ? The spasm he feels may be the herald of cholera—the sudden ache in the temple may be the courier of death.’

58.—Again then we repeat, the insurance of life in all cases is wise—in many, absolutely necessary—in some, an imperative duty. How many of our readers, who at this moment possess a comfortable competency, would, in the event of death, leave their families in a state of destitution ! How many family circles, the heads of which are in the receipt of a liberal salary, living in handsomely furnished houses, and keeping excellent tables, would by a single death, be suddenly deprived of all, and doomed to penury and wretchedness ! How many wives and children have exchanged their happy homes to become the inmates of union workhouses, from the neglecting of life assurance by that person through whose means they were enabled to live in comparative affluence !

PART II.

ON FRIENDLY SOCIETIES AND SAVINGS' BANKS.

Section 1.

Art. 59.—In the preceding part we have advocated the extension, upon proper principles, of the benefits of Life Assurance to the industrial classes as a subject well worthy of serious attention. Its importance cannot, in fact, be over-rated, for anything, which tends to inculcate provident habits among the masses of the people, must be an immense benefit to the community at large. We have said that while Life Assurance has, by means of the London Assurance Offices, been accessible for a long period to the upper and middle classes, these institutions have not, save in one or two recent instances, sought to do business of sufficiently small amounts to be within the reach of the more limited means of the industrious poor; nor have they undertaken to grant allowances in case of sickness.

60.—Working men of provident habits have thus been compelled to establish societies for themselves; and each individual, naturally enough, has become a member of whatever society has happened to exist in the immediate locality of his residence. This society has usually been a public-house benefit club—and associations of that description exist in almost every town and small village throughout the kingdom. Altogether they amount in number to many thousands, and profess to guarantee to their members allowances in case of sickness or of death, while they are founded, for the most part, on such erroneous data, and are constituted so unsoundly, besides being managed by persons deficient in practical experience, and often of equivocal respectability, that they have generally been found pro-

ductive of more disappointment than advantage to their unfortunate subscribers.

61.—We should state, at the outset, that a Friendly Society is an association formed on the principle of Mutual Assurance. Each member contributes a certain subscription per week or month, as may be agreed upon, in return for which the society undertakes to pay him a certain sum weekly in sickness, or on attaining old age. In addition to this, it generally agrees to grant to his family a certain amount on his decease. It would be merely wasting words to expatiate upon the importance to the working classes of such societies, when properly conducted. They promote habits of forethought and prudence, they inculcate the wholesome truth that self-reliance is, after all, the only real independence;* they collect, and might apply to the best purpose, the earnings of the industrious and the savings of the economical.

62.—We are met, however, on the threshold of the subject,

* [POOR RELIEF.—By a return recently made to an order of the House of Commons, we find that in the 619 unions into which England and Wales are divided, comprising 14,060 parishes, with a population of 16,273,694, 749,370 paupers of all classes were relieved upon the 1st July, 1853, as compared with 789,021 on the 1st of July, 1854. This gives an increase of 39,651, or 5·3 per cent. for the year ending the 1st of July, 1854. In England there only two counties which show a decrease—Durham of 579, and Rutland of 6. In Wales, however, there are five in which a decrease has taken place—viz., Anglesea, of 373; Carnarvon, of 763; Glamorgan, of 297; Merioneth, of 55; and Montgomery, of 22. The total decrease in these seven counties is 2,096, which deducted from the total increase in others of 41,747, gives the average increase of 39,651, before quoted. The increase of able-bodied paupers out this number is 14,461. It further appears from the return that the total expenditure for the in and out-door relief in all the unions for the half-year ending Lady-day, 1853, was 1,665,978*l.*; while for the half-year ending Lady-day, 1854, it was 1,900,295*l.*, being an increase of 234,317*l.*, or 14 per cent. Glamorgan is the only county in England and Wales which can show a decrease in its expenditure, it having expended in the half-year in question 22,700*l.*, against 24,649*l.* in the corresponding period of the previous year—a decrease of 1,949*l.* It is to be remarked that the parishes under local acts and the 43rd of Elizabeth (except those acting under the accounts order of the Poor Law Commissioners) are not included in this return.]

by the lamentable fact, that these societies have failed, and are failing, by thousands. This truth is admitted, though reluctantly, by every writer who has discussed the question. What causes such wholesale bankruptcy? Evidently it cannot proceed from the unattainable character of the objects for which Friendly Societies are established, and must therefore be attributable to defects in the means by which those objects are sought to be accomplished.

63.—It is our intention to pass in review the errors and requirements of existing societies, hoping to show how they may be changed, from sources of loss and disappointment to their members, into means of improving the condition and ensuring the independence of the industrious classes.

64.—The first defect to which we shall refer, is the *inadequacy* of the rates of contribution demanded from members. These rates have, apparently, in the majority of instances been calculated, not so much by a consideration of the value of the risks incurred, as by the desire to frame a scale of subscriptions, which from its liberality, would be sure to become popular. It must be obvious, however, that if a society sells for threepence a-week a risk which in reality should be rated at sixpence, bankruptcy is, sooner or later, inevitable. Nor is the case thus supposed by any means extreme or rare. Thousands of societies have, from time to time, existed, in which the contributions required from members have been ridiculously small in proportion to the benefit promised. Nor is the error altogether to be wondered at. What the proper rate of contributions should be is an exceedingly difficult problem, which only an experienced actuary can be expected to solve with accuracy. One element of difficulty is contained in the fact that the circumstances of Friendly Societies vary almost as much as their localities and names. They are, indeed, so dissimilar, that a table of rates which may be perfectly safe for one may be preposterous for another. Frequently, also, there is no means of ensuring that a rate, which, in the earlier years of the Society's existence might

be judiciously adopted, will not, as practical occurrences affect it, become entirely insufficient. The financial considerations influencing such societies are necessarily fluctuating, and their managers are unable to improve them, because they are deterred from seeking high professional advice from the great expense generally attending such a step.

65.—The rates, moreover, besides being *inadequate in amount*, have been *inequitable in principle*. It has been, and still is, a common practice to admit, as members of Friendly Societies, all persons between some specified ages, and to charge them all alike. Now, nothing can be more obvious, and nothing is more undoubtedly established than the fact that, year by year, the liability of every individual to sickness and to death becomes more imminent. If this were not already self-evident, the last Census returns ought to impress it, once for all, on the popular mind. Other things being equal, a man aged fifty is much more liable to fall sick, or to die, than a man aged twenty. Hence it is clearly unfair to the man at twenty to exact from him the same payments as from the man at fifty. Many working men understand this circumstance more thoroughly than they are supposed to do, and this is one cause why these societies are so frequently disrupted and dissolved. Let us describe a case, by way of illustration. A society starts, we will suppose, with three hundred members, all between the ages of twenty and forty-five, and all contributing the same sum per month—calculated after the *lowest possible tariff*—for the sake of the same benefits. For the first few years all goes on well enough; but, in progress of time, there is a cessation in the influx of new members. In the meanwhile, all the members have become older, and their numbers diminished by death or removal. The society, under such circumstances, presents but little attraction, and certainly offers no security to a young man contemplating the future. He perceives that the Average is against him, and, accordingly, inquires for a society composed of persons more nearly of his own age, even though it proceed

upon the same erroneous principle of making a fixed charge for members at whatever period of life they may have arrived. He easily discovers what he is in search of, for in these times of competition new societies are starting up nearly every day, and he can immediately identify himself with such an association. Should it appear prosperous, those members of the older society who happen not to be above the maximum age, very quietly transfer their membership to the younger, leaving their more aged associates to shift for themselves. These poor persons, staggering under the weight of augmented years, struggle on for a time; but the claims of the sick increase; the funds perpetually diminish; the contributions daily becoming smaller, and the disbursements greater; and at length, finding it hopeless to attempt carrying on its career, the society is abandoned. Many, who had trusted to it for relief in the decline of life, are now entirely disappointed, and naturally regret that they had ever joined in such an undertaking. The supporters of the new society in their turn become older, and, in due succession, are supplanted by others still more new, which drain off their means of prosperity, and leave them high and dry, just as they in their earlier days had left their comrades.

66.—These circumstances demonstrate that the promoters of Friendly Societies entirely forget one element essential to success. It is impossible to secure a just average without a large body of members. The splitting up into five or six societies of a number of persons scarcely sufficient to form one of a moderate extent totally destroys all prospect of fair average results. No Society with a small number of members can be looked upon as safe, even though its tables may be founded on the most orthodox law possible, or on the brilliant scientific data of the mere statistical actuary; for should its experience turn out worse than the average, its fate is sealed.

67.—And here let us digress to a subject collaterally con-

nected with this, which it is necessary to touch upon before proceeding further. When a table is adopted for use, the next point is, as far as may be practicable, to prevent fraud. All experience shows that one main obstacle to the prosperity of a "Sick-allowance" Association is the facility offered for fraud by feigned prolongation of sickness after a member has passed the stage of inability to return to his work. There is abundance of evidence, in fact, to prove that the majority of the statistical returns with respect to Friendly Societies do not afford a true guide to the actual Law of sickness prevailing among the classes to which their members belong. This may be demonstrated by the simple, though striking circumstance, that a given number of persons of any particular occupation, who are members of a Sick Benefit Society, will be found to experience a higher rate of sickness per annum than an equal number not having joined such an institution.

68.—It is further ascertained that members of a society "lay up" unnecessarily when suffering from trifling ailments, because they know that the sick allowance is accessible for the support of their families. They are thus induced to yield to the temptation of indolence, and the principle of Friendly Societies, so excellent in itself, becomes a source of evil.

69.—It is obvious, therefore, that any Law of sickness derived from the experience of Friendly Societies should be distinctly denominated "Friendly Societies' law of sickness," and it is plain that the higher or lower degree of moral rectitude prevailing in any particular locality, whether agricultural or manufacturing, and the greater amount of supervision exercised by the Committee of management, will tend to produce a variation from any assumed standard in the rate of sickness experienced by a particular society.

70.—But the great defect of Friendly Societies as ordinarily constituted consists in the *inefficiency of their management*. Among numerous proofs of this fact it may be mentioned how clumsily the books are kept, and how full of blunders they

frequently are. Yet few matters are of more importance to such associations than correct book-keeping, since it is quite possible for a society to be ruined by defective accounts alone. The importance, too, of promptly investing the funds as they are received, does not appear to be sufficiently understood, although all tables pre-suppose that a moderate rate of interest, at least, will be continuously realised upon the subscriptions. If, then, this interest be *not* realised, the actuary's calculations are falsified; the society deceives itself, and the members are disappointed. On this important subject we would refer the reader to our Treatise on Industrial Investment and Emigration, (2nd Edition, p. 43.)

71.—Again, another circumstance, though not perhaps an actual cause of the failure of Friendly Societies, is, nevertheless, productive of a vast amount of mischief. We allude to the common practice of holding meetings at public houses, which, in the Treatise above quoted, we have said cannot be too severely condemned as being in direct antagonism with the prudential purposes for which Friendly Societies are instituted. It draws persons desirous of saving money into the very place where there is a temptation to spend it. They invite economy into the very temples of dissipation and extravagance. They ask men to be prudent within the reach of those influences that seduce them into riot and waste. On this subject the following judicious remarks occur in a letter from the agent of an assurance office. He is referring to the introduction of life assurance among the men employed in the extensive works of which he is manager. “My only fear is that the men are so addicted to drink that we may get many black sheep unawares. They join in their public-house clubs by hundreds, but it is a pity they have not got a club apart from such places, as they spend even more than their subscriptions when they go to ‘pay club’ as it is called.”

72.—This state of things is truly lamentable, and we need not wonder that, under such circumstances, innkeepers look upon

Friendly Societies as valuable auxiliaries. Cases could be mentioned in which five or six societies hold their meetings at the same public-house, the grand object apparently common to them all being the especial benefit of the host. As, however, in these times almost every town and even village can furnish suitable places of meeting, such as national school-rooms, &c., there is every facility for carrying out measures by which the adoption of public-houses, as places of resort for the meetings, could be at once and for ever discontinued.

73.—It would be desirable that the societies should be sufficiently *extensive in their operations* to merit the attention, and secure the services of men of experience and standing as Directors and officers. We are aware that, even under the present system, the clergy and gentry do often manifest great interest in the welfare of Friendly Societies in their immediate neighbourhood, and we are also fully prepared to admit that the admission of men of education and station as Honorary members sometimes introduces a benevolent and protective watchfulness, which tends to establish relations of almost affectionate regard between men, who would otherwise, by the differences of social position and fortune, be entirely separated, and assists in preventing that feeling of hostility or mistrust, with which working men too often regard those who occupy places above them. Moreover, in a pecuniary point of view, the donations of honorary members, by increasing the receipts, without augmenting the disbursements, add to the benefits that may be afforded by the association, as well as to its prospects of permanent stability.

74.—Nevertheless, we are clearly of opinion that the interest, which the higher classes should have in a Friendly Society, ought to be of a more direct and substantial character than honorary membership would involve. It is, in fact, desirable that their contributions should not be in the shape of Donations, but Investments. The less a society relies upon accidental and

uncertain sources of income, and the more it proceeds upon strict business principles, the better will it be for its members. It should more nearly resemble in its constitution and objects the Metropolitan Assurance Companies, and should take rank as a Provincial Assurance Office, with such a Guarantee Fund paid up at the outset, as would be a safeguard against contingencies, and a guarantee for good management. This fund should yield to the subscribers a fair rate of interest, and should afford to the gentry of the district an opportunity of investing a portion of their surplus incomes profitably, while it should at the same time enable them to assist in promoting a highly laudable cause.

75.—With this view, the following clauses were, at our suggestion, introduced in July, 1854, by Mr. Fitzgerald, the member for Horsham, into the Friendly Societies Bill, which was then in Committee.—(The word *Debenture* being used instead of *Guarantee share*.)

76.—“Any Friendly Society already, or hereafter to be established, may, for the purpose of forming a permanent guarantee and expense fund, issue from time to time such a number of paid-up Guarantee shares not exceeding the sum of £5 each, as the Actuary to the Commissioners for the Reduction of the National Debt, or an Actuary of some Life Assurance Company, established five years at least in London, Edinburgh, or Dublin, shall by writing under his hand certify as being safe and proper; such shares to be in the form set forth in the schedule to this Act, and the total amount of the money to be received on account of such shares, together with such other monies as may be mentioned and provided for by the Rules of the society, shall form a fund to be applied exclusively in defraying all expenses and charges of management, and in aid of the funds of the Society, in the event of the moneys received on account of any particular fund or benefit not being sufficient to meet the claims thereon; and in

case the said fund shall be applied for any other purposes than those hereinbefore mentioned, every person so misapplying the same shall be personally responsible for the repayment of the amount so misapplied."

77.—"All such Guarantee shares shall be registered in the books of the society issuing the same, and shall bear interest at the rate of £3, 5s. per cent. per annum, which shall be a first charge on the funds of the society, and such Guarantee shares shall not be chargeable with any stamp duty whatever, and may be transferred by indorsement to any other person, and the holder of every such Guarantee share shall be entitled by way of bonus, to such a part of the profits of the society as the rules may provide, and as shall be approved of by such Actuary as aforesaid; but such Guarantee share shall not be paid off except in case of the dissolution of the society, and no trustee, or other officer of the society subscribing a Guarantee share shall be individually responsible for the payment of the same."

78.—In order, further, to enable societies which are in an unstable condition to secure their members some portion of the benefits desired, the following clause was also introduced:—

79.—"Any Friendly society, or any Life Assurance Company, may, with the assent of, and upon such terms as may be approved by such Actuary as in this Act mentioned, contract with any Friendly Society whatever, to take upon themselves all or any of the liabilities of such Friendly Society, and thereupon any member of such society, or person claiming through or on account of a member, in case of non-payment by such society of any moneys agreed to be paid to or on account of such member, shall have the same remedy against the contracting society or company, in case the benefit assured to, or liability incurred on account of, such member, shall have been undertaken by such society or company, as if such company was a society established under this Act, and the deed of such

company had directed that the dispute should be decided pursuant to the provisions of the Acts in force relating to Friendly Societies."

80.—It may be desirable here to explain that the Friendly Societies Bills of the last and the present session have had for object the consolidation of the laws relating to Friendly Societies, and at the same time the introduction of such legislative improvements as experience has shown to be necessary. It is obvious that some step of the kind is imperatively required, for the process of legislation upon the subject has for years past been so experimental in its character, that it has often been a matter of extreme difficulty to determine what were the exact provisions of the existing laws. There have been Acts to *consolidate*, Acts to *amend*, Acts to *explain*, Acts to *continue*, and Acts to do we know not what else; and these various Acts have all contradicted each other in the most remarkable manner. The case was even in 1854 considered so desperate, that it was deemed advisable to refer the new Bill to a Select Committee, in order that the details of the measure might be so perfected as to afford room to hope that the new "Act to consolidate" would render further legislation unnecessary, at least for many years to come. The Select Committee was accordingly appointed, which examined a number of very important witnesses; but, as usual in such cases, their Report was presented to the House at so late a period of the Session, that the carrying of an Act of Parliament embodying their recommendations was clearly out of the question till the following year. The clauses we have quoted above were brought under the notice of the Committee on nearly the last day of their sitting; the natural consequence of which was, that the members had not time to bestow upon them that amount of deliberation which we believe would have led to their adoption. We are, however, convinced that some such provisions are required before Friendly Societies can ever be placed upon a thoroughly

satisfactory basis. It is not only as a safeguard against contingencies, and as a protective fund to fall back upon, that a paid-up capital is desirable—it is also, that it would afford to wealthier and more educated persons an opportunity of serving the Society, and would, moreover, introduce into the management of their affairs that* knowledge and experience which, as yet, has not been generally found in the conductors of Friendly Societies. It is on these grounds, that we proposed that the capital should not be paid off except in case of the dissolution of the Society, that we may retain by direct pecuniary interest, during the whole of its existence, that care and vigilance which would be as necessary in the last years of a Society as in the first.

81.—To facilitate the development of these views, we have drawn up for the *Friendly Societies' Institute*, a set of rules (vide pp. 113—143) which are suitable for the establishment of Provincial Friendly Assurance and Investment Societies. The aggregate of the clauses are so framed as to retain all those features, which would make the establishment of Friendly Societies desirable for the industrious classes, and to† exclude all

[* Mr. Farr, in an able paper published in the Appendix to the Twelfth Annual Report of the Registrar-General, after pointing out the evils of the existing Friendly Societies, proceeds very justly to remark that, “All the successful business of this country is carried on by the co-operation of masters and men, and the first evident objection to the benefit club is, that in general it applies the dissociation of these two classes in a business as difficult as any of the trades of the country ; in a business which is carried on by elaborate tables, calculated by actuaries, involving the probabilities of life, funds accumulating at compound interest, and the secure investment of money during the whole life of a generation of men. One of these clubs undertakes what no large insurance society is willing to undertake, and without an actuary, plays with the certified edged tools of actuaries.”]

† [The Select Committee on Mr. Sotheron's Friendly Societies Bill took evidence on the subject of child murder, alleged to be induced by the temptation of funeral money, and which the above clause was expressly introduced to check. They examined four judges, two governors of prisons, two coroners, a chief of police, a chaplain of a prison, a registrar of births and deaths, and a solicitor who had been engaged in a prosecution for child murder ; and

such as experience has proved to be objectionable. Provisions, also, have been introduced with respect to the investment of the Societies' Funds, which are in accordance with the extended powers that were conferred by the Act 13 and 14 Vic., cap. 115, and continued by 15 and 16 Vic., cap. 65, and are included in the Bill of the present session. The following are the objects for Friendly Societies, according to the Act 13 and 14 Vic., cap. 115. In the Appendix are given the objects as altered by the Bill of 1855.

“1. For insuring a sum of money to be paid, on the death of a member, to the widower or widow of a member, as the case may be, or to the child, or to the executors, administrators, or assigns of such member, or for defraying the expense of the burial of a member, or of the husband, wife, child, or kindred of a member; subject always to the restrictions hereinafter enacted in that behalf:

“2. For the relief, maintenance, or endowment of the members, their husbands, wives, children, or kindred, in infancy, old age, sickness, widowhood, or any other natural state of which the probability may be calculated by way of average.

“3. For insuring or making good any loss or damage of the committee came to the conclusion that the instances of child murder where the motive has been to obtain money from a burial society were very few (they had evidence of only four convictions in 13 years), and that it was not necessary to legislate specifically with a view to the prevention of that crime. The judges, however, urged upon the committee that it was not allowed to any person, rich or poor, to insure the life of another, unless he had a pecuniary interest in the continuance of such life, and that an insurance for burial-money is at variance with this rule, and, if permitted, ought carefully to be limited to the avowed object of providing for the child's funeral. The committee considered that the law requiring the payment to be paid to the undertaker is disliked, and is altogether illusory and inoperative; in many cases no such person is employed. They proposed, as a better course, to limit the amount to be received, whether from one or more societies, and that a medical certificate of the cause of death should in all cases be produced.]

live or dead stock, goods, or stock in trade, implements and tools, sustained by any member by fire, flood, shipwreck, or any contingency of which the probability may be calculated by way of average:

“4. For the frugal investment of the savings of the members for better enabling them to purchase food, firing, clothes, or other necessities, or the tools, implements, or materials of their trade or calling; or to provide for the education of their children or kindred: Provided, that the shares in any such investment society shall not be transferable, and that the investment of each member shall accumulate or be employed for the sole benefit of the member investing, or of the husband, wife, children, or kindred of such member, and that no part thereof shall be appropriated to the relief, maintenance, or endowment of any other person whomsoever, and that the whole amount of the balance due, according to the rules of such society, to such member, shall be paid to him or her on withdrawing from such society:

“5. For the purpose of enabling any member, or the husband, wife, or children, or nominee, of such member, to emigrate: provided that, in case of any society for that purpose one of the trustees shall be a justice of the peace residing in and acting for the county, borough, or place in which such society shall be established:

“6. For any purpose which shall be certified to be legal in England or Ireland, by Her Majesty's Attorney-General, or in Scotland by the Lord Advocate, as a purpose to which the powers and facilities of this Act ought to be extended:

“Provided always, that it shall not be lawful for any society or branch established under this Act to assure the payment to or on the death of any member, or on any contingency, or for any of the purposes for which the payment of sums may be assured under this Act, of any sum exceeding one hundred pounds, nor any annuity exceeding thirty pounds per annum,

nor a sum in sickness exceeding twenty shillings per week:

A further limitation occurs in clause 3 of the Act, which runs as follows:—

“3. And be it enacted, that in all societies established under the provisions of this Act, or of any Act relating to Friendly Societies, it shall not be lawful for the trustees or other officers of such societies to assure a sum of money to be paid on the death of a child, whether a member of such society or not, under the age of ten years, except the actual funeral expenses, not exceeding three pounds in case of such child, to be paid to the undertaker or person by whom the burial is conducted, and whose receipt alone shall be sufficient discharge to the society, nor to pay any sum of money which may have been insured and become payable on the death of any member thereof, or of the husband, wife, or child of any member, unless the party applying for the same shall produce and deliver to the officer a certificate, signed by a physician, surgeon, apothecary, or coroner, in the form set forth in the schedule to this Act annexed, except in cases where from the nature of the circumstances it is impossible to procure such certificate; and if any officer of such society shall pay or cause to be paid any such sum of money as aforesaid, such officer shall be liable to a penalty not exceeding ten pounds, to be recoverable before any justice of the peace or magistrate of any borough where such society is established; and, upon conviction thereof, one half of the said penalty shall be paid to the informer, and he is hereby declared to be competent to give evidence in this case, and the other half shall be paid to the overseer of the parish in which the place of business of such society or branch is situated, to be applied to the relief of the poor therein.”

82.—We would here remark, that it is not always desirable for a Society to include in its plan of operations more than one or two of the objects above enumerated. The most important points, to which the attention of Friendly Societies has

hitherto been directed, and to which it should still continue to be turned, are the provision against sickness, and the payment of a sum at death. The latter of these is, in fact, Life Assurance on a small scale; and the laws of mortality being well established, there is no reason why, with proper management, this branch of the business might not be transacted at a profit to the members. If provincial societies on an improved basis—such as we have suggested—were formed, we have no doubt this result would be achieved. Meanwhile, we would strongly urge upon the conductors of the smaller of the existing Societies throughout the kingdom, the importance of getting their Death risks underwritten by some respectable metropolitan Life Office. They would thus secure themselves against any undue pressure from excessive mortality, and would furthermore obtain, from time to time, through the London Society, the benefit of its Actuarial superintendence, in determining the sufficiency or otherwise of their contributions and funds, which in itself would be to them an advantage.

83.—It is, however, with regard to Sickness, that the greatest skill and care is required. The Law of sickness, notwithstanding the various attempts to discover it, still remains a mystery. This need cause no surprise when the difficulties of the subject are considered, and it is not to be wondered at that different enquiries should disagree so widely in their results. Sickness—unlike death—is not a broad well-defined fact about which there can be no mistake. There may be, as we have already observed in these pages, a *feigned* prolongation, or a lasting assumption of sickness, and the experience of a society with a lax management be thereby rendered much more unfavorable than it ought to be. This branch of Assurance has consequently found but little favor with the London Life Offices, for they could not possibly bestow that amount of vigilance over the “sickness” of members residing at a distance, which would act as a sufficient safeguard against fraud.

Section 2.

Art. 84.—The most difficult part of our subject is the determination of the processes by which the necessary amount of knowledge may be placed at the command of the conductors of Friendly Societies throughout the kingdom. The creation of a superior description of society, and the consequent introduction as members of a more educated class, would, no doubt, tend somewhat towards the accomplishment of the object in view, but much would still be required. If, indeed, the possession of a good set of rules and tables by a society were all that were necessary to ensure success, the matter would be simple enough. But it so happens, that neither rules or tables, however good, are of much avail, unless they are placed in the hands of persons who know, or are at least furnished with facilities for ascertaining how to carry them out properly and efficiently. Furthermore, it is important that, from time to time, the exact financial position of the society should be investigated—a process involving considerable labour and expense. This is, in fact, a prominent difficulty connected with Friendly Societies. We scarcely ever hear of a Society which institutes periodically any proper investigation into its affairs. Nor can this be wondered at. The members, individually, do not understand the importance of an investigation in the first place, and in the second, supposing them to be convinced of it, they would be deterred by the expense. Few societies, moreover, could afford to pay for a periodical investigation. The problem, then, to be solved, is how to bring the necessary legal and actuarial skill within the reach of Friendly Societies generally. It has appeared to some public men, that this might be accomplished by the agency of a Central institution, to which all societies, affiliated therewith, should pay a given annual sum entitling them to such information and advice as they might require. Accordingly some time ago* the ‘Friendly Societies

* [In the recent Friendly Societies Bill, clauses were inserted to establish an unpaid Commission, but it was thought such a commission would be ineffective,

Institute' was founded, and for the information of those of our readers to whom this Institution is yet unknown, we would state that the chief object it has in view is to afford information to the managers or members of societies formed under the Friendly Societies' and other Acts affecting Industrial Associations, supplying them with such particulars and advice, from time to time, as may be useful or desired. It is presumed that if the co-operation of the individuals composing a society of the above kind can be made to work for the benefit of the members of that society, the co-operation of the various Friendly Societies throughout the kingdom in the support of a central institution can, in like manner, be made to work for the advantage of the societies in general, and of each one in particular. The Friendly Societies' Institute,* by being placed in communication with all the existing societies, and receiving from time to time valuable information therefrom, is enabled to collect and employ that information for the benefit of the general body. The societies are thus a mutual help to each other, and the results obtained from the labours and collective experience of the Central Institution are available to each society at a small charge; and it is believed, that when it is known that tables can be furnished, rules prepared, calculations made, and advice given at the Friendly Societies' Institute for a moderate annual fee, by the aid of an establishment of subordinate skilled assistants, permanently retained in its service, thousands of Friendly Societies would avail themselves of its advantages.

85.—A general union of Societies, even with separate funds unless its duties, powers, and responsibilities were fixed. It must be obvious, that a commission consisting of members of Parliament, would neither have the practical knowledge of this most intricate subject, nor be sufficiently regular in attendance (from the customary absence of members from town during the recess), to be of real advantage, unless practical men were also added to the commission.]

* [Forms of application for admission to, or affiliation with the Friendly Societies' Institute, will be found in the Appendix.]

and risks, would, moreover, permit of a member transferring his privileges of membership from one society to another, if his circumstances or affairs caused him to change the place of his residence. By way of illustrating this, suppose a working man, a member of a Friendly Society at Liverpool, were to obtain employment at Birmingham and meet with some accident or illness, which rendered it necessary for him to avail himself of his right on the sick fund. How convenient it would be if he could apply at Birmingham to some society corresponding to the one at Liverpool for his allowance. And such transactions would be likely to prove mutually advantageous to both societies, for taking an average number of transactions, it is probable that the society at Birmingham would have a corresponding application to make to the society at Liverpool for some member of their's sick at that town. We are aware that the rules of many societies allow of a member changing from one society to another, provided the first society pays over to the second the amount of his subscriptions and interest, or such a sum as an actuary may fix; but what we recommend is a mutual Agency system, whereby one society would assist the other in paying the allowances of those who might be sick, and in watching against fraud.

86.—We might proceed still further to point out the advantages which may result from the Friendly Societies Institute, but enough has probably been said to show the importance and value of such an institution. It may be worth noticing, however, in this place, that what the Friendly Societies' Institute is founded to attempt, the government of the French Emperor has already undertaken and with great success. We feel strongly tempted to quote from the able and exceedingly interesting official documents relating to this question which have been published by the French government, and introduced into England in our report to the Friendly Societies' Institute. We are convinced, however, that in England the preference would be given to a central Institution, which is not under

the control of the government. Englishmen are proverbially averse to government interference, and we think we may safely aver that a voluntary society, such as the Friendly Societies' Institute, is more likely to answer its purpose than any government department having the same objects in view.*

87.—It has been suggested by a Barrister of great experience in Friendly and other Industrial Societies, Mr. William Tidd Pratt, (to whom we are indebted for a careful revision of the draft rules which are given at page 113), that a clause should be inserted in the Friendly Societies' Act, authorizing the *Trustees of the poor* in the various parishes of the United Kingdom to defray the expenses of formation and management of one soundly constituted Friendly Society in their districts, provided they have a right of supervision or participation in management.

Such an allowance towards the expenses would remove one great difficulty that an Actuary has at present to contend with, in settling the rates of Friendly Societies, as he has no means of determining, *a priori*, what will be the proportion which the future expenses of the Society will bear to the premiums contributed by the members; and a theoretical margin based on the experience of one Society is found not always to be a guide to the probable expenditure of another.

As the funds of a *Parish Friendly Society* would have to be applied solely in payment of the benefits assured by it, its progress could be marked from year to year with greater facility; whilst a positive diminution could be made in the

* ["Having examined the returns of a great number of societies, many of which we have had personally to report upon, we have recently compared their statistical results with the Parliamentary Report of 1854, and we believe that the tables deduced by Mr. Finlaison cannot be safely adopted by any society without material adjustment, through the unsatisfactory manner in which items of importance have been suffered to become mingled in the schedules that were filled up by the Friendly Societies. Nor can any regard be paid to the ingenious theoretical law conjectured by Mr. Farr in the 12th Report of the Registrar-General."]

rates charged to the members, as from the practical impossibility of safe competition, the Society would be likely to absorb the members of the other Societies in the neighbourhood, more particularly of those which are conducted at public houses, or are under doubtful management. Hence we have no hesitation in saying that Parish Societies, by such an arrangement, would tend to realise the conceptions of those sound economists, who consider that the ultimate diminution of the poor's-rate depends on the increase of provident habits among the working classes, especially when they make provisions for the unavoidable necessities of their old age.

88. *Model Tables*.—Although we are impressed with the advisability of Societies adopting uniformity in their rules, principles of management, and forms of assurance, we cannot concur in the strong tendency which may have been observed both in most of the witnesses before the Parliamentary Committees, and on the part of the members towards the adoption of model tables of rates of contributions and benefits. Appendix A to the Report of Lord Beaumont's Committee, session 1847-8, paper No. 126, contains striking illustrations of the varying liabilities to which different Societies are subject; but the additional examples more recently brought forward are certainly very curious and remarkable, both in a scientific and practical point of view, and conclusively prove that nothing would be more dangerous to the interest of Friendly Societies than the adoption of Model Tables. It has been well said elsewhere, that there is nothing connected with the study of a statist and the profession of an actuary, requiring more judgment and experience than the proper discharge of the duties devolving on him in giving advice to Benefit Societies; and every day shows more clearly that the circumstances in which different Societies are placed are so dissimilar as to render the liabilities of one no criterion for those of another. Moreover, were it once understood that certain Model Tables might be

adopted by any and every Friendly Society, the Managers would rely on the Tables *alone* for security. They would lose sight of the fact, that prudence and economy in the management of their affairs was still indispensable, notwithstanding the guardianship of the Model Table, and thus Societies might continue, as heretofore, to proceed rapidly on the road to ruin, not discovering their error till it was too late to retrace their steps.

89.—*On the Sickness and Mortality of Members of Friendly Societies.* One of the requirements of the 9 and 10 Vic. c. 27, was that all Friendly Societies enrolled thereunder, should send in to the Registrar of Friendly Societies, a statement of the sickness and mortality experienced during the five years ending the 31st December, 1850. These returns were received by the close of the summer of 1851, and “formed a huge mass of papers; when bound up the collection made no less than forty large folio volumes, each from six to seven inches in thickness.” The duty of reducing this vast mass of information to a tabular form was entrusted to Mr. A. G. Finlaison, the Actuary of the National Debt Office, who presented the results of his labours to the House of Commons, in two reports, one of which appeared in 1853, and the other in 1854. As there are several matters touched upon in these reports which will doubtless interest many of our readers, we propose to make a few extracts from these valuable documents.

90.—The *general results* of the inquiry are stated as follows:—

“The total number included in the Returns selected of persons as liable to sickness was 792,980; of these 198,152 were returned as sick. The number returned as sick out of each 100 persons liable to sickness was 24·99. The average amount of sickness per annum to each person included in the returns was 10·1155 days; and the average sickness per annum to each person sick was 40·4809 days. So that, practically speaking, the returns show that each member, young and old, of the Friendly Societies in

England and Wales, is very little more than ten days sick in the year; that one man in four is attacked with sickness in the course of the year, and that those who are attacked suffer nearly $40\frac{1}{2}$ days' sickness.

“The mortality is returned at 1.26 per cent. per annum only, while the exclusions are stated to be 3 per cent. per annum on the average. The rate of mortality is low, but it is confirmed by the experience of the Scotch and Irish Societies; by official returns made from Friendly Societies in France to the French Government; and by independent researches made by private persons among large numbers of the Societies of Odd Fellows, &c. It is to be remembered that the mortality set forth in this abstract is that which happened during the members' presence for the five years, or a portion thereof, in the Society, and does not, by any means, represent the mortality to which they may have been, or perhaps will be, subject out of the Society, previous to joining it, or after they may leave it. Other causes may be inferred from the high per centage of exclusions found to prevail, especially at the earlier ages. But, whatever be the reason, the mortality per cent. is the result of the deaths recorded and returned.”

91.—On the subject of *Burial Clubs* the report thus speaks:—

“The results given in from the Burial Societies of England and Wales are very imperfect. In those clubs, the members' payments are so very low, being usually but at the rate of 1*d.* or 2*d.* per week, that their funds would not bear the extraneous expense of remunerating a clerk or secretary for the construction of a voluminous Return, which in some cases would perhaps contain an account of many thousand individuals.

“These societies are of more frequent establishment in the counties of Lancashire, Cheshire, and Kent, than in any other parts of England. It was found upon an examination of the Schedules sent in from Lancashire, that a considerable number of these societies admit members from the age of one month and upwards. The number present in eight of such societies in each of the five years, and the number of deaths were as follows:—

	Persons.	Deaths.
1846	12,153	430
1847 ..	12,346	461
1848	13,075	379
1849	13,052	432
1850	13,572	337
TOTAL.....	64,198	2,039

the mortality, therefore, being at the rate of 3·176 per cent. A considerable number of Returns were also received from Burial Societies in Kent ; but in none of these apparently, were children under 14 years of age admitted. The number of persons in twenty of such societies in each of the five years, and the number of deaths were as follows :—

	Persons.	Deaths.
1846	6,143	105
1847	6,193	132
1848	6,014	112
1849	5,866	104
1850	5,721	102
TOTAL.....	29,937	555

the mortality, therefore, being at the rate of 1·854 per cent. No returns of sufficient importance to justify the trouble of further compilation were received from Cheshire.”

92.—The most important topic brought under consideration in these reports, is the amount of *sickness* actually experienced in these Societies. In the investigation of this subject, the report divides the country into eight districts or “provinces,” and gives the results for each. The most remarkable results are stated as follows :—

PROVINCE.	No. per Cent. taken Sick.	Days of Sickness. to each Sick Person.
Northernminimum	19·89	maximum 50·38
Welsh	22·14	 45·73
Manufacturing	22·34	 45·02
Midlandmaximum	29·29	minimum 36·37

The report then remarks “that if the difference in susceptibility to attack be most in favour of the north country, it is strikingly

reversed on the point of duration. For the midland contributor to Friendly Societies has but five weeks' sickness to the seven weeks' illness, with which the northman is afflicted. This bears out the surmise of the lesser reluctance shown by the agricultural labourer, to place himself on the "Sick List," as it is evident his attacks are by no means of such a formidable character as those to which the north countryman is compelled to succumb.

"In balancing the liability to sickness against its duration, it is a merciful consequence of their mutually compensating effects that the quantum of sickness to which each man throughout England is liable varies but little, let his abode be in what province it may. If he be frequently attacked, the complaint is of a less formidable character; and if the disease that hovers about him be virulent, his hardy nature is such that it repels the evil for a greater length of time. Whether the sicknesses that visit the north be more malignant, or whether the *nidus* they there find fosters more greatly their venom, it is not within my province to hazard an opinion. I may, however, conjecture that their native intensity is mitigated by the more careful habits of the south, although even in this latter quarter there is yet room for improvement.

"But between the two classes of facts a consolatory balance is established. The average sickness of the whole year to each person throughout England and Wales differs in its most violent extremes but one day and a half. The Returns give the case as follows:—

Average Sickness per Annum to each Person, in Days.	
South-Western province	11·01
Midland	10·65
Welsh.....	10·13
Manufacturing	10·06
Northern	10·02
Eastern	9·88
South-Eastern	9·66
Metropolitan	9 45

"The imaginations of enthusiasts in favour of the rural superiority as regards exemption from disease, are not borne out by the facts derived from the experience of the working classes of society.

“For, contrary to most preconceived opinions, the place where the average sickness per annum afflicting each member of a club is at the lowest point in all England is the metropolis; while even the Northern and manufacturing districts also take precedence of three out of the five agricultural districts, and of provinces which previously would have been supposed incomparably superior. This is a matter, however, which comes home to the pecuniary stability of Benefit Societies, while the susceptibility of attack and the duration of the sickness chiefly concern the individual.”

93.—In a subsequent part of the report, the trades and occupations of the members are arranged in four great classes, viz., light and heavy labour *without* exposure to the weather, and light and heavy labour *with* exposure to the weather, and the principal results are exhibited as follows:—

“When the sickness attendant upon labour under the four conditions in which it has been severally arranged is observed, some marked differences between the respective classes immediately attract notice. The first phase under which the contrast is exhibited has regard to ‘the number returned as sick out of each 100 persons liable to sickness.’ The adjusted results show the following per-centages:—

Ages.	LIGHT LABOUR.		HEAVY LABOUR.	
	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.
20	22·70	23·71	26·47	28·69
25	19·90	21·04	25·10	26·47
30	18·51	19·64	23·45	25·74
35	18·49	19·02	24·00	25·64
40	19·40	19·88	24·34	27·01
45	20·49	19·33	25·14	28·14
50	23·07	20·74	28·10	29·34
55	25·63	21·93	31·40	31·11
60	28·36	22·87	33·25	35·42
65	32·80	24·84	38·26	40·25

“It would therefore seem to appear from the above, that, although exposure to the weather seems to exercise a less prejudicial effect on the *light* employments above 40 years of age, yet on the whole, and especially in the case of heavy labour, the liability to attacks of sickness at all ages, is greatest among those who are most exposed to the severity of the elements.

“Where the important practical question of ‘the average amount of sickness per annum to each person’ is involved, the results are equally well defined in the same direction. For instance :

Age.	LIGHT LABOUR.		HEAVY LABOUR.	
	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.
	Days.	Days.	Days.	Days.
20	6·48	6·00	6·71	7·16
25	6·00	5·78	6·82	7·45
30	6·01	5·85	7·06	7·69
35	6·20	5·84	7·45	8·04
40	7·13	7·29	8·03	9·40
45	8·03	7·48	9·87	10·78
50	10·48	10·02	12·15	12·58
55	13·65	10·66	16·08	14·33
60	17·18	11·23	20·36	21·78
65	26·22	18·15	26·99	31·55

“The remarkable mitigation of the sickness in the case of the light labour *with* exposure to weather, as compared with the other three classes, at once attracts notice, and indicates the most healthy condition of existence. But the result of exposure to weather is not to be conclusively inferred therefrom by any means, as it would appear in the case of heavy labour to be an ingredient materially aggravating the quantum of sickness attaching to this ruder class of occupation. The agency of more powerful causes than the influence of the elements begins to make them perceptible in this arrangement of the subject.

“The third aspect in which the case has to be viewed is with

regard to the average amount of sickness per annum undergone by each person sick. The results are as undermentioned:

Age.	LIGHT LABOUR.		HEAVY LABOUR.	
	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.	<i>Without</i> Exposure to the Weather.	<i>With</i> Exposure to the Weather.
	Days.	Days.	Days.	Days.
20	28·53	25·30	25·37	24·97
25	30·16	27·47	27·19	28·15
30	32·43	29·80	30·09	29·89
35	33·50	30·70	31·04	31·37
40	36·74	36·66	32·97	34·80
45	39·21	38·71	39·28	38·29
50	45·43	48·34	43·25	42·87
55	53·26	48·63	51·22	46·05
60	60·57	49·11	61·23	61·48
65	79·96	73·07	70·54	78·39

“In this presentment of the case, the action of the degree of labour, or of the exposure to the weather, seems to disappear and manifest no influence. The only law or principle perceptible seems to be that immutable rule which pervades the whole observation, namely, the inverse duration of the sickness in proportion to its frequency of attack. It will be observed that the class engaged in heavy labour *with* exposure to the weather is most liable to attack out of the four divisions of employment, and is least afflicted in respect of duration.

94.—With regard to the connexion between *sickness* and *mortality*, the Report, after giving some Tables, shews that:—

“As the average amount of sickness has been shown to derive its increase more from the duration of the illness than from the frequency of the attack, and it is even more clearly evident that the mortality is in a constant ratio with the *duration* of the sickness, it is difficult to entertain the doctrine sometimes advanced, that the sickness and mortality of a community do *not* follow the same line of march. There is far greater reason for believing that they

advance together in line, when reference is carefully made to the mass of facts marshalled in the columns appended to this Paper. The inference that the two laws of sickness and mortality do not of necessity run *pari passu*, has been drawn perhaps from the less striking averages of the amount of sickness shown by each person. But when the returns of the amount of sickness to each person sick are carefully perused, the steady result of the mortality correspondent at each age, shows that death is no remiss attendant on the couch of real sickness. A contrasting glance at the columns setting forth the number sick out of each 100 persons liable, in other words, the probable liability to attack, proves, on the other hand, that the 'grim feature' does *not* bestow his presence in obedience to every casual invitation. But, as might be expected, positive sickness and death in the great majority of cases, go hand in hand."

95.—With regard to the *Sickness of Females and Children*, the Report observes:—

"It is much to be regretted that facts relative to the sickness of children and females were not obtainable in greater numbers from the Returns of Friendly Societies, and that where information on this point was supplied, it was of a scanty and unsatisfactory character. There are nevertheless many funds existing for the payment of allowances in sickness to or on behalf of children, which have been formed among the Sunday and other schools in the great provincial towns, and from the experience of these Friendly Societies of a very peculiar class, it is to be hoped that data will be forthcoming on some future occasion. In respect of the sickness incidental to the female members of Friendly Societies, there is much reason to believe that it is heavier in amount than that undergone by the males. But unfortunately mention was scarcely made in the Returns of the nature of the occupation in which the women were employed. And looking to the striking influence which this consideration displays on the amount of sickness undergone by males engaged in either class of labour, even still more remarkable effects might have been expected to develop themselves in the quantum of sickness undergone, by females engaged in various employments. It would also have been extremely interesting to

note, if possible, whether the difference existing between the constitution of either sex presented any influence in relation to the different amount of sickness undergone by the females, and at what particular periods of life, and if there were, in fact, any material excess of sickness really suffered by the weaker sex over that undergone by the male during the period of working life, and also during the 70 years' space elapsing after the age of 15, so as to place them on unequal terms with the male contributors to Benefit Societies.

“There can be no doubt that in practical experience the demands made on the funds of the benefit clubs for allowances in sickness are heavier when preferred by the female members. But this may result from two causes, namely, the greater difficulty of searching examination where the delicacy of the sex is respected, and the greater facility of simulation of any slight derangement of the feminine system.

“The more precise determination of the amount of real sickness undergone by the female members of Friendly Societies, therefore, is still a desideratum. It can only be brought about effectually, perhaps, by the growth and encouragement of funds for allowances in sickness which shall be formed for the benefit of females exclusively, and in which careful record of the age, occupation, and other necessary particulars, will be made in respect of each member, and from which trustworthy statements of this information can be obtained. The distinction of sex also should be carefully observed in framing any returns from School Friendly Societies formed among children. But in the absence of better data than is now possessed in reference to the female sex, and to the very youthful contributors to the above associations, there exist insuperable difficulties in the way of constructing Tables of contribution precisely applicable to the amount of risk incurred. It is to future observation, therefore, that the community must look for the means of more accurately providing those benefits in sickness which are as requisite to the relief of the industrious females, and the parents among the working classes, who may be suffering under a calamitous source of expense, as they are necessary to the wants of the provident males of the same order of society.”

Art. 96.—*On the proper method of obtaining Returns.*—Mr. Finlaison, junior, deserves much credit for the elaborate and skilful manner, in which he has prepared the Report from which these extracts are made; but the result of his calculations, although satisfactory in respect to the averages from the whole body of returns, cannot be considered as worthy of perfect confidence when he attempts to classify them under the heads of ‘light and heavy labour,’ ‘with and without exposure,’ and into towns, cities, and rural districts. The materials furnished to him were not voluntary on the part of the managers, and important items in the schedules sent round were, in many instances, either wilfully or otherwise, misunderstood by them;* so that it is only for average results on the aggregate of information, that positive errors and inaccuracies in one society would probably be counterbalanced by negative errors in another. The above fundamental difficulty in classification throws a doubt upon the applicability of Mr. Finlaison’s Tables as a guide to the operations of local Friendly Societies. Mr. Charles Ansell, F.R.S., whose experience on these subjects entitles his opinion to great weight, made, by anticipation, some sound remarks on this very point before the Lords’ Committee in 1848, when the expediency of requiring returns from Friendly Societies was being discussed. He stated that the Returns, in the form in which they were then demanded from every society in the kingdom, were made carelessly, and when they came, had no authority, and that it would be much more satisfactory that information (to be used as the basis of a model law of sickness) should be of a *voluntary character*, and procured from but 100 or 200 societies, under such circumstances as would offer a guarantee for their correctness, rather

* [Since the above was written, the Return, relating to another class of associations, viz., Building Societies, has been published, which was moved for by The Right Hon. Mr. Sotheron Estcourt. It contains a great variety of palpable errors, evidently caused either by carelessness on the part of the managers, or by a wilful misunderstanding of the questions; so that the particulars furnished are rendered of very little value as a guide to the financial condition of Building Societies.]

than that deductions should be attempted from an immense number of schedules filled up by the managers in obedience to a compulsory Parliamentary enactment; he considered that particulars, prepared voluntarily for the purpose of an actuarial valuation, would be more likely to be accurate in every detail.

The late eminent Actuary, Mr. Griffith Davies, F.R.S., and several others of great experience, who were examined at the same time, stated their full concurrence in the view of Mr. Ansell.

97.—*Definition of Sickness.*—In attempting to determine the Law of Sickness prevailing among the members of Friendly Societies, almost all investigations have produced unsatisfactory results, and presented discrepancies of a singular character, from the want of an accurate and uniform definition of wherein “sickness” consists. As we have said in previous articles—the word “sickness,” indeed, is itself rather unfortunate, as that which is medically so described is not the precise risk assured against by Friendly Societies.

What the members seek to provide for is “*temporary inability to labour*,” whether arising from disease or accident, and whether necessitating confinement to the house or the sick bed, or only preventing the continuance of their avocations. Now in practice it is found that certain degrees of ill health do not really produce immediate inability to work. Medical men affirm “that labourers, *who have not a Friendly Society to fall back upon*, often go about their employment with disease of the heart, tubercles in the lungs, and other disorders of considerable severity. Among 120 Cornish miners in actual work, it was ascertained that only 63 had good health:—the remainder being all the time suffering from incipient serious maladies. Among other classes of operatives, it has been also ascertained that, favoured by the inspector or foreman of the works, men really in bad health, *who have no sick money to draw*, do not always find it necessary to go on the sick list:—*i. e.*, their labour is mitigated without their stopping off duty.”

98.—The theory adopted by Mr. Charles Ansell, in the inquiries set on foot by him about the year 1828, at the instance of the Society for the Diffusion of Useful Knowledge, does not, to a satisfactory extent, tend to the distinction of Friendly Society “sickness” from medical sickness, and probably this gave rise to the opinion expressed by him twenty years later, in 1848.—Other eminent Actuaries, in extensive contributions to the subject, have set forth the results of a variety of investigations, from which Tables are deduced, providing for “permanent” as well as “temporary” inability to labour. The data of such tables, however, were not confined to societies submitted for actuarial investigation, but, on the contrary, in one case, procured promiscuously from managers by a well intended offer of prizes. Hence, there was not sufficient security for accuracy in the materials furnished, since no result affecting any particular society could arise from them, as would have been the case had they been extracted from its books for the purpose of a valuation, upon which an Actuary was to found a report.—Mr. Finlaison, junior, convinced that some definition of Sickness must be adopted, states that, in making his calculations,—

“The cases of superannuation were carefully separated from the mass, and subjected each one to a rigid scrutiny, to determine whether it was a case of chronic sickness, or a case of superannuation, in the sense of a retirement on a pension for old age.”

99.—The following *Definition of Sickness* in relation to the ‘ability to labour’ is given by a high medical authority:—all sickness, being either acute or chronic, recoverable or irrecoverable, no attack of acute *recoverable* sickness ever lasts longer than from six weeks to three months, and chronic recoverable sickness no longer than twelve months. Chronic irrecoverable sickness may therefore be held to be that which exceeds one year, or which a medical man from the nature of the case should certify to come under that denomi-

nation. On this point, the calculations of the Highland Society went to show that, in all ages under 70, 20 per cent. of the inability to labour was "bedfast," 50 per cent. "walking," and 30 per cent. "permanent."*

Section 3.

As to the True Law of Sickness.

Art. 100.—In accordance with the valuable suggestion of Mr. Ansell (mentioned in Art. 96), we have, in order to test the views taken by him, caused to be analysed the result of our own experience in connection with a great variety of societies, whose affairs have been officially laid before us or the Friendly Societies' Institute, taking care to limit the definition of sickness to the inability to continue labour, and comprehending under the denomination of "chronic," that which

* [In further illustration of this, we give, from the investigations of Dr. Basham of Westminster Hospital on one form of disease, the following particulars:—

	Number of Cases of all Diseases, including Accidents.	Number of Cases of Paralysis of all forms.			Proportion per cent. of Cases of Paralysis to all Diseases
		Males.	Females	Total.	
St. George's Hospital ...	20,646	255	166	421	2.0391
Westminster Hospital ...	15,653	—	—	274	1.7504
Total.....	36,299	—	—	695	1.9147

It will be observed that the number of males attacked with paralysis is to the number of females nearly in the proportion of 3 to 2. The *average age of attack* was as follows:—

Males	-	-	-	40.470 or 40½ years nearly.
Females	-	-	-	38.000 or 38 "
Irrespective of Sex	-	-	-	39.496 or 39½ "]

after a sufficiently long duration might and should be treated as irrecoverable.

101.—Our observations have led us to the discovery of what may be termed the *True Law of Sickness*. It would seem clear—and in this the table of Mr. Finlaison affords striking confirmation—that the degree of inability to labour at various ages follows a simple natural law, which may be expressed as follows :—

1^o.—That, from about the age when infantile diseases are past, and the nature of the constitution of the individual is becoming more declared,—at age 15,—there is a certain *constant minimum rate of Sickness per annum*, to which human beings (on the average of a large number of lives) are subject at every period of life, and that this rate depends upon the race, climate, &c., and, as far as observations in the United Kingdom go, seems to be between the limits of *five* and *seven* days' sickness per annum.

2^o.—That, at each age, every individual is exposed, according to his occupation, rank of life, &c., to

<i>An excess of sickness, over such constant sickness,</i>	$\left\{ \begin{array}{l} \text{increasing with} \\ \text{his years and} \\ \text{equal to} \end{array} \right\}$	<i>the sum of the excesses in the 5th and 10th years preceding.</i>
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By way of illustration, in the class of labour referred to in the subjoined Table, the constant is $6\frac{1}{5}$ days, and the rate per annum of sickness

at age 20, $6\frac{57}{100}$ days (nearly) or $\frac{37}{100}$ of a day excess over the constant ;

at age 25, $6\frac{60}{100}$ days, or $\frac{2}{5}$ of a day excess over the constant.

The excess, therefore, at age 30, is the sum of these excesses, or $\frac{77}{100}$ of a day. This, added to the constant, gives the rate of sickness $6\frac{97}{100}$ days : and so for succeeding years.

In the Mathematical Appendix at the end, we have shown that the preceding law may be expressed in another form, as follows :

<i>The difference between the rate of sickness at any age and that 5 years below,</i>	$\left\{ \right.$ equals $\left\{ \right.$	<i>the difference between the rates of sickness for 5 and 15 years younger than the given age.</i>
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For example.—

The difference between the rates of sickness for ages 35 and 30, } equals { the difference between those for ages 30 and 20.

102.—With this new law—the truth of which seems beyond dispute—societies, when looking at the probable sickness in the future, instead of relying upon the results of other associations, as set forth in published tables, for an estimate of what they might themselves anticipate, may correct it by a comparison with their own past experience: the only point to be guarded against being that, if they have had too low a rate of sickness in former years, arising from a favourable aberration, (which could be tested by a comparison with the standard table for their class or locality), they would have to make an addition to the probable rate during future quinquennial periods.

103.—*As to Recoverable Sickness.*—This law bears, in the case where Irrecoverable Sickness is *excluded*, a remarkably close relation to Mr. Finlaison's results, in the case of the "Average Sickness per annum to each Person in Friendly Societies, in England and Wales, adjusted by taking the average of each five years, for the middle year of each five." In the following Table, we have placed Mr. Finlaison's by the side, and it will be seen that it agrees within a decimal fraction:—

(Report of 16th August, 1853. Tables, p. 3.)

Age.	By New Law.	Government Returns, 1853.
	Constant, 6.20	
15	6.23	6.21
20	6.57	6.88
25	6.60	6.83
30	6.97	6.91
35	7.37	7.14
40	8.14	8.21
45	9.31	9.34
50	11.25	11.49
55	14.36	13.95
60	19.41	18.73
65	27.57	27.36

* This Table includes the sickness of those that die under a year's illness, and of those that recover. Rates of subscriptions based upon it would not suffice to provide the allowances contemplated in clause 107 of the Rules (p. 138).—Similarly, if clause 108 be adopted, the subscriptions would vary according to whether it be intended, that the renewal of the allowance to a member, at the end of the 52 weeks' non-pay, should depend on his having gone through the stage of recovery, or only on his having had his pay stopped, although his illness had continued.

104.—*As to General Sickness, including Irrecoverable Cases.* The following are the corresponding rates of sickness according to the new Law, when all cases of inability to labour are provided for.

Age.	Average Sickness per annum to each person, in days.
	Constant, 6.20
15	6.38
20	6.88
25	7.06
30	7.74
35	8.60
40	10.14
45	12.54
50	16.48
55	22.82
60	33.10
65	49.72
70	76.62
75	120.14
80	190.56
85	304.50
	becoming permanent soon afterwards.

105.—*As to Rates of Premium.*—To determine the proper rates of subscription to be charged by provident associations,

* [Tables, suited for particular localities or occupations, can be obtained from the Corresponding Secretary of the Friendly Societies' Institute, Mr. E. W. Brabrook, who has assisted us with exceeding actuarial talent and skill in the labour of discriminating among the complicated elements, that enter in the tables and have rendered the numerical deductions very difficult.]

the question of Mortality has also to be considered ; but no law, deduced from Friendly Societies' experience, can be depended upon, for the reason laid down by Mr. Finlaison in his Second Report, *viz.*, that numbers of members retire from each society before death. In all *mortality* Tables calculated from Friendly Societies Returns, through a disregard of this fact, as Mr. Griffith Davies said in his evidence in 1848, "man is made almost immortal." Hence, corrections have to be applied from the returns of the Registrar for the general population.

It is evident from our Law of Sickness, that, considerably more must be paid by each subscriber than the actual average benefit received by him in the early years of membership. In other words, if 100 persons have together 600 days sickness in the first year of their membership, their aggregate subscriptions must be considerably higher than the 600 days' pay. It is not sufficient that the society should pay its way, and that the claims for sickness should be not more than the total premiums received, but a margin must remain to be invested as a provision for future years.

Section 4.

As to the Rules of a Friendly Society.

Art. 106.—The set of Rules given in the following pages (113—144) is designed to afford to Solicitors, Clergymen, and others, who may be contemplating the formation, in London or the provinces, either of large Industrial Insurance Associations or small Benefit Clubs, a guide as to the principal regulations which would be necessary, whether the association be registered as a Friendly Society, or be made a Joint Stock Company.

The main clauses of the Rules are also suitable for INDUSTRIAL PARTNERSHIP OR TRADE SOCIETIES, substituting the corresponding objects and benefits to be obtained by the members.

107.—*As, at first sight, the Rules may appear somewhat voluminous, we would explain that, in order to meet every possible case, a variety of regulations have been brought together, which, although necessary for a large general society, would not be all required by smaller institutions, associated in the form of a club for a particular object. In printing a comprehensive set, our desire has been to enable parties to select such regulations as may be necessary for the society they have in view, whether it be a Sick Club, a Provision for Old Age and Deferred Annuity Society, or one for the Assurance of Sums payable at Death.*

108.—*As to the necessity of completeness in Rules.*—To secure brevity, framers of the Rules of Benefit Societies not unfrequently leave out clauses, afterwards found to be of vital importance. We would, therefore, caution clergymen and others not to take for granted that they are perfectly competent themselves to frame the regulations required for the society, the establishment of which they are contemplating. However small or humble its purpose may be, great care in drawing up its provisions is of primary importance, and those, who endeavour to prepare rules for local clubs, should be cautious not to disregard the necessity of perfect legal accuracy and consistency in them as an aggregate, otherwise inconvenience and litigation are sure to arise hereafter in settling the rights of the members. Many instances might be cited of either loss to societies, or injustice to members, which has arisen from an ambiguous or erroneous wording of the clauses. It may be advantageous that the benefits offered should be few in number, but it is very unwise to suppose that it is equally desirable not to make the Rules so far complete,—without being too voluminous,—as may be requisite to secure their being fully suited for the perfect working of the society.

109.—As the Rules were printed before the passing of the recent Acts, some trifling alterations are necessary to adapt them

to the present state of the law ; and the reader will be pleased to substitute 18 *and* 19 *Vict.*, c. 63, and 21 *and* 22 *Vict.*, c. 101, for the 13 *and* 14 *Vict.*, c. 115, wherever the latter occurs in the Rules. The following are the most important new provisions :—

Rule IV. (As to Arbitration).—Under the 21 and 22 *Vict.*, c. 101, s. 5, the rules of any society may provide that all disputes shall be referred to two Justices of the Peace, or in Scotland to the Sheriff of the County.

Rule VIII. (As to Investment of Funds).—By s. 32 of the Act of 18 and 19 *Vict.*, the funds of the society may be invested upon any security whatever authorized by the rules, “not being the purchase of house or land, (save and except the purchase of buildings wherein to hold the meetings or transact the business of such society,) and not being the purchase of shares in any joint stock company or other company, with or without charter of incorporation, and not being personal security, except in the case of a member of one full year’s standing at least, and in respect of a sum not exceeding one half the amount of his assurance on life, such member providing the written security of himself and two satisfactory sureties for repayment, and in case of such member’s death before repayment, the amount of such advance, with interest, may be deducted from the sum so assured, without prejudice in the meantime to the operation of such security.”

Rule XII. (As to Dissolution of the Society).—Sect. 8 of the 21 and 22 *Vict.*, (1858) provides, that an agreement for dissolution shall be valid if, instead of stating the exact arrangements intended to be made, it refers the settlement of the rights of the members either to the Registrar, or to an actuary of five years’ standing, whose decisions are to be final.

Sect. 4 of the Act of 1858, enables any society to change its name, with the consent in writing of the Registrar, and under s. 7, actions may be brought against any society in the name of the Secretary or any other officer. Actions brought by the society must still be in the name of the trustees, under s. 19 of the Act of 1855.

† RULES

OF THE

FRIENDLY SOCIETY.

ESTABLISHED—OF—18—

(Pursuant to Act—and—Vict., cap.—)

CONSTITUTION.

I. *Name and Object of the Society.*

1.—This society shall be called the _____ FRIENDLY SOCIETY, and is established for the purpose of assuring to persons of both sexes, between the ages of ten and sixty (and in special cases at more advanced ages), one or more of the following benefits, viz., a weekly sum during sickness, with medical attendance and medicine; an annuity commencing at once, or at sixty, sixty-five, or seventy years of age; the payment of a certain sum at death; and endowments for children, on attaining the respective ages of fourteen, eighteen, and twenty-one, and for adults, at any specified age; [*or other contingency.*]

II. *Date of Formation and Place of Meeting.*

2.—This society shall be considered to begin, and the first meeting thereof shall be held, on _____ the _____ day of _____ 185____, at _____ o'clock in the evening; at the first offices of the Society. The offices of the society shall be at _____ in the city of _____, or at such other place as the directors may determine; and in case of any alteration in the place of meeting of

[† In case of its being desired to enrol the Society under the Joint Stock Companies Act, as a provincial Life or other Assurance Company, the rules above given would suit with the modifications required by the Act.]

the society, notice shall be sent to the Registrar of Friendly Societies in England, within seven days after such removal, signed by three members of the society, and countersigned by the secretary.

3.—The annual general meeting of the members shall take place at the offices of the society, on the first _____ day in the month of _____ in each year after the year 18 _____. A special general meeting of the society may be called by the directors of their own authority, and shall also be called upon a requisition sent to the secretary, signed by twenty-five members, and fourteen days' notice of such meeting shall be given by circular to each member, stating the time, place, and object thereof; and no other business than that specified in the circular shall be transacted at such meeting.

III. *Voting.*

4.—Every question submitted to any meeting of the directors or members generally shall be decided by the votes of the majority of the members present thereat and entitled to vote; and every director shall be entitled to one vote at any meeting of the directors, or of the members. All votes shall be first taken by show of hands, upon which the decision of the chairman of the meeting shall be final, unless a scrutiny be demanded, in which case it shall be forthwith taken.

5.—No member, except on the question of the dissolution of this society, shall be entitled to more than one vote, neither shall any director or member be allowed to vote by proxy, nor shall any member be entitled to attend any meeting of the society, or to vote on any question without producing his certificate of membership, if required to do so by the chairman of the meeting, nor until he has been three months a member of the society, and has duly paid his subscriptions for that period.

6.—In all cases of equality of votes, the chairman of the meeting, in addition to his vote as a member of the society, shall have an additional or casting vote.

7.—No officer or member of the society shall be allowed to vote on any question affecting his individual interest or conduct, nor shall he be present at the discussion thereof, should the majority of the members present desire him to withdraw.

IV. *Arbitration.*

8.—Any dispute between the society and any individual member thereof, or any person entitled to claim through or on account of any member, shall be referred to arbitration.

9.—At the first meeting of the society after the enrolment of these rules, five arbitrators shall be named and elected (none of them being beneficially interested, directly or indirectly, in the funds of the society), and in each case of dispute, the names of the five arbitrators shall be written on pieces of paper, and placed out of view in a box; and the three whose names are first drawn out by the complaining party, or by some one appointed by him, shall be the arbitrators to decide the matter in difference, and their decision shall be final.—If any of the arbitrators refuse to act, or any vacancy occurs by death or otherwise, the directors at the fourth meeting of their board afterwards held shall elect another arbitrator in the place of the arbitrator refusing, or to supply any such vacancy, who shall act until the next annual general meeting of the members.

10.—Every member requiring a reference to arbitration, shall deposit with the secretary ten shillings, to abide the result; and the arbitrators may direct the expenses of the reference, or any part thereof, to be paid by such member in such proportion as they may think fit.

11.—Any member neglecting to attend on arbitration, if summoned to do so, or refusing to answer any question put to him by the arbitrators, touching the matter in dispute, shall be fined five shillings for the first refusal, and be expelled the society if he persevere in such refusal; and if any member, officer, or other person, be proved to have tampered with one or more of the arbitrators, or attempted to do so, he shall be fined ten shillings for each offence, and be subject to exclusion if the fines be not paid before the next meeting of the board.

V. *Alteration and Construction of Rules.*

12.—Any of the rules herein contained, or any future rules of the society, may be repealed, altered, or added to, at a general meeting of the members convened for that purpose, by giving to each member seven days' notice of the time, place, and object thereof,

in pursuance of a requisition for that purpose, signed by not less than seven members, and addressed to the board of directors, setting forth the exact alterations and additions to be proposed at such meeting; but no such repeal, alteration, or addition shall be made, except with the concurrence of three-fourths of the members present at such general meeting, at which any amendments relating to the particular rule to be altered or added to may be proposed; and no rule not mentioned in such requisition shall be in any respect altered or repealed, except the same may relate to the subject matter of any rule so mentioned in the requisition.

13.—All alterations in, or additions to, these rules, shall be duly enrolled and certified, after which only they shall come into effect, and be binding on the members.

14.—In the construction of these rules the word “member” shall apply to an ordinary member, or person assured for any one or more of the benefits of the society, and not to an honorary member, unless when so expressed; the word “month” shall be held to be a calendar month; the word “year” shall mean the society’s year, and every such year shall be taken to expire with the _____ day of _____; the word “board” or “directors” shall mean board of directors; the words “policy” or “policy of assurance” shall be an assurance for any benefit whatever authorized by these rules; and the words, “this society” shall mean and include any branch or branches thereof; and whenever any word importing the singular number or the masculine gender only is used, it shall be held to include or apply to the plural number or feminine gender, as the case may be, and *vice versâ*, unless there be something in the subject or context repugnant to such construction.

VI. *Alteration of Rates and Tables.*

15.—It shall be lawful for the directors, with the advice of the consulting actuary, to alter from time to time the tables in use by the society, and the rates of subscriptions at which members may thereafter be admitted into the society, provided that such tables and rates, shall not be considered to be in force until a copy thereof shall be deposited with the Registrar of Friendly Societies in England and Wales.

VII. *Funds.*

16.—Separate and distinct accounts shall be kept of the funds, receipts, assets, and liabilities of each class of business of the society, and no class shall in any manner be liable to make good the deficiencies in, or be entitled to participate in the profits of, any other class.

17.—Each class shall consist, and be composed, of all contributions made by members in order to assure for the benefits of the said class.

18.—The funds arising from all the classes shall be invested in common, (in the manner hereinafter provided,) and the profit or loss arising from such investments, shall be rateably divided among the classes, according to the amount of money contributed by each.

19.—The members of this society shall have an interest in its assets, and its profits and losses, in proportion to their qualification in the particular class to participate in the benefits of which they have become members.

20.—Each class shall be entitled to participate in the benefits of the permanent guarantee and expense fund, in such proportion as the directors shall from time to time think safe and equitable.

VIII. *Investment of Funds.*

21.—So much of the funds of the society as may not be wanted for immediate use, or to meet the usual accruing liabilities, shall, with the consent of the board of directors, acting on the advice of the solicitor, be invested by the trustees in such of the securities authorized by the Act of Parliament in force for the time being relative to friendly societies, as the board shall direct, and more particularly in any savings' banks, subject to the provisions of Acts in force relating to the same, or in any of the Parliamentary stocks or public funds of Great Britain and Ireland, or at interest upon Government securities, or in the Bank of England stock, or in the stock or securities of the Honourable East India Company, or on mortgage of freehold, leasehold, or copyhold property, such leasehold being for a term of years absolute, of which not less than thirty years shall be unexpired, and such copyhold being copyhold of inheritance in Great Britain or Ireland, or in security of any heritable property, or in any chartered or other public joint stock bank in Scotland, or in or upon the security of any county or borough rates

authorized to be levied and mortgaged by any Act of Parliament, or on loan to any member of this society, on the security of any policy of assurance effected therewith on his own life, provided that the amount of such loan shall not exceed the actual estimated value of such policy at the time such loan be made; and it shall be lawful for the trustees, from time to time, with such consent as aforesaid, to alter and transfer such securities and funds, and to make sale thereof respectively; and all dividends, interest, and proceeds which shall from time to time arise from the monies so laid out or invested as aforesaid, shall be brought to account by the trustees, and shall be applied to and for the use of this society, as hereinbefore provided.

IX. *Permanent Guarantee and Expense Fund.*

22.—There shall be created a Permanent Guarantee and Expense Fund to meet the contingencies attending each class of the society's business, and the general expenses of management: such fund to consist of [(_____) £5 *guarantee shares paid up in full, and of*] all fines or fees mentioned in these rules, (except remuneration fees payable to the officers of the society), and of all monies arising from the sale of rules, balance sheets, reports, or other documents, published by the board; and also of such an annual deduction or percentage on the other receipts and subscriptions as the consulting actuary may from time to time recommend; and also of all donations that may be made by honorary members or other friends to the society; and likewise of any interest to arise from the investment of such fund.

23.—All expenses and charges of management in carrying on the business of the society, and all surplus claims upon the society's funds for benefits assured in any class over and above the amounts respectively applied thereto, shall be defrayed out of the Permanent Guarantee and Expense Fund; provided always, that if [*the payments which shall have been or may have to be made out of this fund, shall have the effect of reducing the same to less than one-third of the amount at that time paid up on the guarantee shares, or if*] at any investigation of the affairs of this society, it shall be found that the funds of any class, together with the sum or sums for which the members thereof may have made themselves responsible, are insuffi-

cient to meet the claims upon that class, or if it shall appear that such is likely to become the case, [*it shall be lawful for the directors, with the advice of the consulting actuary, either to issue an additional number of guarantee shares, on such terms as he may deem just and proper, or*] the consulting actuary shall settle and adjust the claims of the members interested in that class or classes in which the deficiency may exist, and may divide among them such portion of the charges as may be necessary in such proportion per member, and to be payable or chargeable after such manner as they may deem equitable; and whatever adjustment shall be recommended by the actuary and agreed to by the board of directors, shall be binding on all parties; and any member refusing or neglecting to comply with such adjustment or alteration, shall be liable to the fines and other penalties laid down in these rules.

24.—At the end of the first five years, and every subsequent five years, investigations into the affairs of the society, valuations and estimates of its liabilities and assets, and of the Permanent Guarantee and Expense Fund, shall be made by the consulting actuary, and if, after all losses and expenses shall have been satisfied and provided for, any surplus profit remain, arising from excess of assets over liabilities, the same shall be [*divided into three parts, one-third part to be allotted by way of bonus among the holders of guarantee shares, and the other two-thirds to be*] appropriated to each class of the society's business, for the benefit of the members thereof, in such proportions and manner as the consulting actuary shall think safe and equitable: provided always, that any appropriation of surplus profit to the members of the sick fund, shall be made proportionably to the number of years that each member respectively shall *not* have received any benefit from the funds thereof.

25.—[*The holders of the guarantee shares hereinbefore referred to shall be entitled, during the continuance of the society, to half-yearly dividends, after the rate of 3 per cent. per annum on the amount paid up on the same, and by way of bonus, to a share in the before-mentioned one-third of the surplus profits, (if any), of the society, that may have been ascertained at quinquennial divisions of profits. And such participation in the profits shall not entail any liability whatsoever upon the holders of the guarantee shares, nor shall they be*

entitled in respect thereof to any advantage or benefit from the society, beyond the dividends and division of surplus profits above referred to.]

26.—[*The amount paid up on the guarantee shares, shall not be withdrawable from the funds of the society, but the rights and profits appertaining to the same shall be transferable, on payment to the society of six pence per share, by the owners thereof to any other parties who may be approved of by the directors, and an entry of such transfer shall be made in one of the books of the society, and be signed by the original and new holders of each share, and by the secretary.*]

X. *Indemnity to Officers.*

27.—The trustees, directors, and all other officers of the society shall be and are hereby indemnified and saved harmless, out of its funds and property, from and against all losses, cost, charges, damages, and expenses, which they may incur or be put unto in or about the execution of their respective offices, trusts, and services; nor shall they be liable for any banker, broker, or other person, with whom the trust monies shall from time to time be deposited for safe custody, investment or otherwise, nor for any involuntary loss, misfortune or damage whatsoever, which may happen in the execution of their respective offices, services, or trusts, or in relation thereto; and none of them shall be answerable for any act or default of any other of them, nor for the insufficiency or deficiency in the title or otherwise, of any security whatsoever, in which the money of the society may be laid out or invested, unless the loss, arising from such means, shall happen through their own neglect or default; nor unless he or they shall, in pursuance of 13 and 14 Victoria, c. 115, s. 14, make a declaration in writing under his or their hands, to be deposited with the registrar of friendly societies, that he or they respectively are willing to be so answerable, and then only to such amount as shall be specially named in such declaration aforesaid.

XI. *Power to Amalgamate.*

28.—It shall be lawful for this society to become united and incorporated with, [*or to underwrite the whole or part of its liabilities in,*] any other friendly or life assurance society or societies, duly established according to law, upon such terms as the consulting actuary may

advise, and as may be approved by the major part of the trustees and board of management of both societies.

29.—The directors may also incorporate the members of any existing society, so as to become part of this society, upon such terms as may, upon the recommendation of the consulting actuary, be mutually agreed upon. And the limit as to age, fixed in these rules, as regards the admission of new members, shall not extend to any person, being a member of any existing society, who shall become a member of this society under this rule.

30.—[*The directors shall also have power to contract with any other friendly society whatever, and to underwrite, undertake, or reassure all or any of the liabilities of such society, upon such terms as may be approved by the consulting actuary.*]

XII. *Dissolution of the Society.*

31.—No dissolution of this society shall take place so long as any of the intents and purposes in these rules remain to be carried into effect, unless the votes of five-sixths in value of the then existing members, and also the consent in writing of all persons then receiving, or then entitled to receive, relief from the society, be first had and obtained ; and for the purpose of ascertaining the votes of such five-sixths in value, every member shall be entitled to one vote, and to an additional vote for every five years that he may have been a member ; provided always that no member shall be entitled to more than five votes in the whole ; and in all cases of dissolution, the intended appropriation or division of the funds, or other property of the society, shall be fairly and distinctly stated in the proposed plan of dissolution prior to such consent being given : and it shall not be lawful for this society by any rule to direct the division or distribution of such funds or property, or any part thereof, to or amongst the several members of this society, other than for carrying into effect the general intents and purposes declared by these rules, as originally certified ; and all such rules for the dissolution or determination thereof, without such consent as aforesaid, or for the distribution or division of the stock or funds, contrary to the rules, shall be void and of none effect ; and in the event of such division or misappropriation of the funds, without the consent hereby declared to be requisite, any

after such removal, or after the appointment of a new trustee or trustees shall have taken place. Any vacancy in the office of trustee, from any cause whatever, shall be filled up at a special general meeting by the members then present, and after every fresh appointment of a trustee or trustees, the resolution of the appointment shall be signed by the chairman of the board of directors for the time being, or by the chairman of the meeting at which such appointment shall have been made, and by three members and the secretary, and countersigned by the trustee so appointed; and the same shall be duly entered in the minutes of such meeting, and sent to the Registrar of Friendly Societies in England pursuant to 13 and 14 Vic. c. 115 s. 14; and the estates, monies, securities, funds, deeds, papers and property of the society shall become at once vested, without any assignment, in the continuing and newly appointed trustee or trustees.

35.—All deeds, writings, and securities to and from the society shall be made and taken in the names of the trustees or trustee for the time being, and shall be deposited with the bankers of the society, to be appointed by the board of directors, or with such other person as they may deem fit, in a box furnished by the society. And no documents whatever shall be allowed to be removed from such box, unless by an order of the board, signed by at least three directors then present.

36.—In case it shall be deemed necessary or expedient to bring or defend any action, suit, or prosecution at law or in equity, touching or concerning the property or assets, rights, or claims of this society, or touching or concerning the breach or non-performance of any of the articles, matters, and things herein contained, or of the conduct of any member or officer of this society, the same shall be brought or defended in the names or name of the trustees or trustee for the time being, and he or they shall be indemnified from all loss or damage to be by him or them sustained in consequence thereof; but no such proceeding shall be taken or defended until the approbation of a majority of the members present at a special meeting to be convened for that purpose, shall be first had and obtained; neither shall any trustee do any act in his official capacity, but by the written order of the board of directors, such order to be signed by the chairman of the meeting at which the same is made, and to be attested by the

secretary. It shall be lawful for the trustees of this society, with the consent of the members thereof, to purchase, hire, or take upon lease, any room or premises, for the purpose of holding therein its meetings, or for the transaction of business relating thereto, and to hold the same in trust in and for the use of this society, and to sell, exchange, let, and demise the same, in whole or in part, with the consent as aforesaid.

XV. *Board of Directors.*

37.—The board of directors shall consist of the trustees, treasurer, and of not less than six, nor more than ten, elected members, four of whom (not being the trustees) shall annually go out of office by rotation after the first two years.

38.—Messrs. _____

shall be and are hereby appointed the first and present directors of the society, with power to increase their number within the before-mentioned limits.

39.—The election of all future directors, in the places of those retiring by rotation, shall take place by ballot, at the annual general meeting in each year, except in case of vacancy by resignation or death during the year, when the same shall be filled up by the remaining directors at their next monthly meeting.

40.—One of the directors in rotation, with the treasurer and secretary, shall attend all meetings for the receipt and payment of money within the hours specified in these rules, or at such other time as the directors may from time to time think fit. Any director failing to attend in his rotation at any meeting for receipt of subscriptions, or to procure a substitute, shall pay a fine of two shillings and six pence, or if he fail to be present within the appointed hour, he shall forfeit one shilling.

XVI. *Qualifications of Directors and Auditors.*

41.—The qualification of any future director or auditor of this society, elected after the first year, shall be the holding, at the time of his election, of a policy of assurance, for £____, with the society, on his own life, for the whole continuance thereof; or of an endowment assurance, on his own life, of at least £____, or of a policy for

an annuity, immediate or deferred, upon his own life, of at least £____; or an assurance against sickness, in respect to himself, of at least (5s.) per week, and upon which he shall have duly made his payments for not less than six calendar months.

XVII. *Power of Directors.*

42.—The board of directors, for the time being, shall, subject to the provisions of the act 13 and 14 Vict., c. 115, generally and specially direct and manage the affairs and business of the society, according to the rules which from time to time may be in force for the government thereof, and shall in all things act for and in the name of this society; and all acts and orders under the powers delegated to them, shall have the like force and effect as the acts and orders of this society at any general meeting. The board shall fill up all vacancies in the offices of this society, occurring during the year, except where otherwise provided for by these rules; and the persons appointed shall continue in office until the then next annual general meeting.

43.—The board shall have power to accept or refuse any proposal for assurance made to this society, or to accept the same at any special or increased rate, or to refuse the same without being compelled to assign any reason for such refusal; or to insert in, or to endorse on any policy by them issued, such special clauses, agreements, and stipulations, as they may deem necessary and expedient; and all assurances effected by the society, and all business transacted, shall be done in such manner, and upon such terms and conditions, as the board may think proper.

44.—It shall be lawful for the board of directors to accept, upon such terms as they in their discretion shall think fit, with the advice of the consulting actuary, the surrender of any policy issued by the society, and also to redeem or re-purchase any annuity granted by the society, and to pay out of the funds or property of the society, the money required for such surrender, redemption, or re-purchase.

45.—The board of directors shall have power to appoint and keep in employ such other officers, clerks and servants as they may deem the business of the society to require, and to remove them or either of them at pleasure, and appoint others in their stead, and to fix the

duties from time to time to be performed by them respectively, and to allow them respectively such remuneration, by way of salary, wages, commission, or otherwise, as they may deem fit and proper.

XVIII. *Meetings of Directors.*

46.—The board of directors, or an executive committee thereof, shall meet for business twice in every month, or oftener, as the circumstances of the society may require, and they shall annually appoint out of their own body, a chairman and deputy chairman, and in the absence of both chairman and deputy chairman at any meeting of the board, the directors present shall appoint a chairman to preside at the same.

47.—The board of directors shall have power to hold special meetings of their own body, and to adjourn their ordinary and special meetings, as well as all general and special meetings of the members of the society, as occasion may require.

48.—The board may divide themselves into rotas, or executive and other committees, for the conduct of the business, and delegate such of their powers and duties to the same as they may think fit: (such rotas, or executive or other committees to be open to the other members of the board;) provided, however, that no rota or executive committee shall continue to act longer than six calendar months at one time, without some change of members. That for the transaction of general business, three elected directors shall form a quorum. If an executive committee be appointed, which at any time shall consist of not less than five members of the board, then the full board shall also meet at least once every three months, to receive a report from the executive committee, as to the business of the society.

XIX. *Resignation or Removal of Directors and Auditors.*

49.—Any director or auditor may at any time vacate his office upon giving seven days' notice in writing of such his intention to the secretary. If any director or auditor shall at any time after his election, cease to keep in force the qualification necessary for the holding of his office pursuant to rule 41, or shall become bankrupt, or be declared insolvent, or die, or resign, his office shall become vacant, and if during the year, the vacancy shall be filled up by the

board, and any director or auditor so elected by the board in the place of any deceased or resigning director or auditor, shall be considered as his substitute, and shall go out of office by rotation at the same time and in the same manner as the director or auditor in whose place he is elected.

50.—Any director or auditor, not being disqualified, retiring from office by rotation, shall be eligible to be reëlected immediately or at some future time, and shall after such reëlection be considered, for all purposes of retirement by rotation, as a new director or auditor of the society.

51.—At the annual general meeting of the members in each year, the directors and auditors going out of office, shall, for all the purposes of the said meeting, or any adjournment thereof, be considered as the directors and auditors in office, and be empowered to act as such, the appointment of their successors having taken place, notwithstanding.

XX. *Treasurer.*

52.—_____ is hereby appointed the first treasurer of this society, and he shall be *ex officio* a member of the board of directors.

53.—All monies received by or on account of the society by the treasurer shall, on the same day, or at latest the day following the receipt thereof, by him be paid to the bankers of the society for the time being; and the book in which the entry of monies so paid, or the bankers' receipt in lieu thereof, shall on the same day be deposited by him with the secretary, who shall cause it to be produced at the next meeting of the directors.

54.—The treasurer shall from time to time, as fixed by the board of directors, deliver to them an account of all the receipts and payments of money had and made by him on account of the society.

55.—The future appointment, removal, and remuneration of the treasurer shall vest in the full board of directors, and upon the removal or resignation of the present treasurer, or any future treasurer to be hereafter appointed, the treasurer so removed shall be incapable to act as a treasurer after the date of such removal, and he shall cease to be a member of the board of directors; and he shall, upon demand,

deliver up and pay over all the monies, funds, and property remaining unaccounted for or unpaid by him to the society.

56.—The present or future treasurer shall give such security, pursuant to the act 13 and 14 Vict. c. 115, s. 11, for the faithful discharge of his duties, as the board may from time to time require.

XXI. *Secretary.*

57.—_____ is hereby appointed secretary to this society.

58.—The secretary shall, under the control and instruction of the board of directors, conduct and manage the business of the society; shall prepare and transmit the returns required to be made by the act of 13 and 14 Vict., c. 115; shall keep the books and accounts of the society; shall send all letters, and generally conduct the correspondence of the society.

59.—For the payment of petty current expenses, the secretary shall from time to time receive a cheque of ten pounds, which shall be duly renewed on a proper account of his former payments, to the amount of the last cheque received by him, being made to, and allowed by, the board.

XXII. *Consulting Actuary.*

60.—A consulting Actuary shall be engaged to make a valuation of the affairs of the society at the end of every five years, to whom also all questions, as they arise, relating to the rules and tables or the benefits of members and the financial condition of the society, shall be specially referred. The report of the auditors shall be countersigned by the actuary, and shall be read at the annual meeting.

61.—_____ is hereby appointed consulting Actuary to this society.

XXIII. *Bankers.*

62.—The board of directors shall have power from time to time to select the bankers of the society, and the signature of a trustee shall not be necessary in any case to cheques drawn on the society's account. No payment shall be made out of the society's funds to the amount of £5 and upwards, except by cheque, to be signed by not less than

three members of the board of directors, and countersigned by the secretary, and all payments so made shall be valid and effectual as between the trustees and the members.

63.—All money received from the members shall be paid in to the bankers to the credit of the society, by the Treasurer, Secretary, or other persons receiving the same, as the board of directors shall appoint.

XXIV. *Solicitor.*

64.—_____ shall be the first solicitor of the society, and it shall be his duty, and the duty of any solicitor who shall be appointed by the board of directors in case of a vacancy (which latter solicitor, as well as the said solicitor hereby appointed, shall be removable for misconduct) to transact all the legal business of the society, under the direction of the board, for which he shall receive a fair and reasonable remuneration; and should any dispute arise as to his charges, the same shall be referred to the decision of the board, whose determination shall be final.

65.—The solicitor shall, at any time, upon the request and at the expense of any mortgagor, furnish him, on receipt of a proper fee for the same, with an abstract of the title, or copy of the security given by him.

XXV. *Auditors.*

66.—At the annual meeting of the members in each year, two auditors (not being directors) shall be elected by ballot from among the members; who, with one to be appointed by the board of directors as public auditor, shall examine and audit all accounts previous to the next ensuing yearly meeting.

XXVI. *Medical Officers.*

67.—There shall be _____ medical officers of this society, each duly qualified, and having a legal title to act as a physician or surgeon. The appointment, remuneration and removal of such officers shall be in and be determined upon by the directors. One of them shall, if required, examine all persons proposing to make an assurance with the society, and shall apply for such written particulars and information connected with every case as shall be necessary or expedient for the knowledge or guidance of the board. The medical officer

designated by the board, or his deputy or assistant, shall at least once in every week, visit any member of the society claiming weekly allowance on the funds through sickness, and shall report thereon as may be directed by the board.

XXVII. *Visitors.*

68.—From time to time, two or more members, one of whom at least, if necessary, shall be a female, shall be appointed by the board, subject to their direction, as visitors; and in case of resignation or illness, their places shall be supplied from among the other members.

69.—They shall periodically visit all members claiming or receiving sick allowance, and they shall receive such remuneration as the board may think fit.

XXVIII. *Local Branches.*

70.—If at any time it shall appear to the directors that the interests of the society shall require the same, they shall have power to create local branches of this society, and to vary, change, and discontinue the same from time to time.

71.—Each branch shall be under the management of an agent, or committee of two or more local directors, (to be annually appointed by, and to be under the control of, the board of directors,) who shall delegate such powers, and allow such remuneration to the said agent or committee, and vary the same, and make such regulations for their guidance and conduct, and in respect to the qualification or interest in the society they should possess, as from time to time the board may deem expedient; provided always, that no resolution or proceeding of any agent or local committee formed under this or any future rule, shall be binding on the society until it shall have received the approval or confirmation of the board of directors for the time being.

72.—The agents or local committees may accept, under the superintendence of the board of directors, proposals for assurance with the society, receive premiums from, and pay the weekly allowance due to, all persons assured through their agency, and transact such other business, through the direction of the board, as may pertain to the duties of their office.

73.—Every agent or branch of this society shall periodically, at

such time or times as the board may fix, transmit a return of the amounts received and paid by him or them since the date of his or their last return, on behalf of the society, together with all other necessary documents and information required by the board.

XXIX. *Agents.*

74.—In case of simple agencies, one or more of the members resident in the agent's districts may be appointed to see to the proper discharge of his duties.

MEMBERS.

XXX. *Admission of Members.*

75.—Any person, male or female, between the age of 10 and 60, in good health, and of good moral character, may, subject to the approval of the board of directors, become an ordinary member of the society, and assure for any one or more of the benefits set forth in these rules, on making application to the board in the form appended hereto; but no minor shall be competent, during his minority, to hold any office in the society.

76.—Any person making such application shall deposit with the secretary, in advance, one month's or week's subscription on the benefit proposed to be assured by him; and shall also produce, before admission, a register of his birth or baptism, or some other satisfactory proof of age, together with a certificate of health, signed by a medical officer of the society; but in the event of his not being admitted, the deposit shall be returned to him by the secretary.

77.—The date of a member's admission shall, in all cases, count from the first payment made by him, after his proposal shall have been accepted by the board.

XXXI. *Honorary Members.*

78.—Any person, upon the payment of an annual subscription of _____, or a life subscription of _____, shall be deemed an honorary member of this society.

79.—No honorary member shall vote at any meeting or in any manner participate in the profits or losses of this society.

XXXII. *Payments.*

80.—All payments by members, whether single, annual, quarterly, monthly, or weekly, shall be made *in advance*.

81.—A member may, at the time of his admission into the society, or at any subsequent period, redeem or pay up the whole of his subscriptions, on one or all of the benefits, for which he may be assured, in one sum; and whenever he may have so paid up his subscriptions for any one or more benefits or assurances, the said benefits or assurances shall continue in force, exempt from forfeiture, (subject nevertheless to the rules) notwithstanding that his subscriptions for any other benefit or assurance may fall in arrear and remain unpaid.

82.—No member shall be entitled to receive the benefit of his assurance or assurances until he has been six clear calendar months in the society, and has also made all the payments due in that time; but any member may immediately become free and entitled to his benefit by paying down in one sum the extra amount of four months' subscriptions, in addition to his ordinary subscriptions to be made during the same period; and this rule shall apply to any member who may, at any time subsequent to his entrance into the society, be desirous of increasing the benefit or benefits for which he may be assured.

XXXIII. *Fines.*

83 —Any member failing to pay his contribution at any meeting for the receipt of subscriptions, shall, for the first two months' defaults, be fined five per cent. on the amount of the arrears. If the arrears exceed three months, he shall pay a fine equal to one-sixth of the amount of arrears then due, and if all arrears of subscriptions or fines be not paid before the end of six calendar months, such member shall forfeit all claims to those benefits in respect of which the subscriptions were due, as well as all monies previously paid on the same; provided nevertheless that if any benefit assured by this society, shall become void in consequence of any non-payment of the premiums from time to time falling due thereon, it shall be lawful for the board of directors to re-establish or revive such benefit at such terms and at such period thereafter, not exceeding six calendar months, as they shall think proper.

XXXIV. *Increase, decrease, or sale of Benefit.*

84.—A member under fifty years of age may, at any time after his admission into the society, increase the amount of any benefits for which he may have assured on admission, or, having only assured for one benefit, may subsequently assure for any other benefit or benefits either continuing his original benefit or cancelling the same, upon producing, if deemed necessary, satisfactory medical evidence of the unimpaired state of his health, his monthly or other subscription for such increase being calculated according to his increased age; his original subscription and the benefit assigned thereby remaining the same.

85.—If any change in the occupation or abode of any member, should at any time render it equitable or expedient that the board of directors should consent and agree to determine or cancel any of the assurances effected between such member and this society, or if any member shall, from loss of employment or other unforeseen circumstances, not occasioned by his immorality or improvidence, be unable to continue his subscriptions, it shall be lawful for the board to allow such member to determine or cancel any one or more of his assurances, or part of any assurance, without forfeiting any other or part of an assurance; and the then value of the assurance or part of assurance so determined or cancelled shall be applied in reduction of the future premiums on that assurance or part of assurance remaining in force; or the board may grant to such member in lieu thereof another equivalent policy, free from all further payments to be made by him, or upon such other terms as they may think fit, and as may be fixed by the consulting actuary as just and reasonable: and no member shall in any other way sell or assign or transfer any benefit or assurance effected by this society, and any agreement made for any such purpose shall be null and void, and every such benefit or assurance, together with all subscriptions paid thereon, or in respect thereto, shall be forthwith forfeited for the use of this society.

XXXV. *Change of Residence.*

86.—Any member changing his place of abode shall give notice of the same to the secretary within fourteen days of such change, and any member neglecting so to do shall be fined _____.

87.—Any member may be transferred from this society or from any branch thereof to any other branch, upon giving due notice in writing to the secretary ; or if any member shall remove from the limits of this society to any place in which a friendly society, not being a branch of this society, but founded and conducted upon the same principles, and adopting the same rates as this institution, shall have been established according to law, the board shall have power, with the consent of such member, to transfer his assurance to such society, and pay thereto such a sum, out of the funds of the class to which he may belong, as may be recommended by the consulting actuary, and agreed to by the majority of the boards of both societies : the subscription and benefit of the member in all cases continuing the same.

88.—The assurance of any member of another society, upon his coming to reside within the limits of this society, may in like manner be transferred, either temporarily or permanently, on his providing such evidence and his subscribing such declaration as may be prescribed by the directors, and conforming to the rules in all respects.

89.—Any member may, (in time of peace) with the sanction of the board of directors, travel and reside in any part of Europe, (except Turkey and the Levant,) the British Colonies, and that part of America 35° north or south of the equator, without forfeiture of the benefits for which he may be assured, provided that he previously make such arrangement respecting the payment of his subscriptions, either by instalments during his absence, or within three months after his return, together with interest thereon, as the board may deem just and equitable : upon fulfilling which, and producing, if required by the directors, satisfactory proof of the unimpaired state of his health, he shall be reinstated, as if no such absence had occurred.

90.—No member, during the period of his residence out of England, shall receive any allowance to which he may be entitled from the sick fund.

XXXVI. *Members may inspect Books.*

91.—Any member may inspect his account in the society's books, during the time that the books are open for the receipt of subscriptions, and any member may have a copy of his account on applying

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to the secretary, after six days' previous notice in writing for that purpose, and the payment of sixpence.

XXXVII. *Alteration of Trade.*

92.—Any member, who shall, at any time subsequent to his admission into this society, change his trade or occupation, shall give notice thereof to the secretary: and if his new trade or occupation be considered by the board as hazardous, they shall have power, with the advice of the consulting actuary, at their own discretion in each case, to make a proportionate increase in the amount of subscription to be paid by the said member to keep his benefit in force, or the board may purchase the same from him as laid down in these rules.

XXXVIII. *Suspension.*

93.—If at any time after a member's admission into the society, doubts may arise as to his age, or as to the truth of any statement made at admission, or on any other point which the directors may deem it necessary to investigate, it shall be lawful for them to call for such evidence as they may require, and in the meantime to suspend such member's benefits until satisfied as to the point at issue, subject to the member's right to have recourse to arbitration as hereinbefore provided.

XXXIX. *Exclusion.*

94.—If any member, having in his possession any sum of money, the property of, or effects belonging to, this society, shall fraudulently withhold, or attempt to withhold the same, he shall, upon satisfactory proof to the board of directors, be fined double the amount of all the monies so withheld or attempted to be withheld.

95.—If any member, upon satisfactory proof as aforesaid, be found guilty of such offence a second time, or shall neglect or refuse within ten days to pay the fine imposed upon him as above, or shall be convicted of felony or any other infamous crime, or shall be proved to be fallen into confirmed habits of intemperance, or if he shall knowingly recommend for membership any person not eligible, according to the rules of this society, or if he shall receive sick allowance from any other friendly society without giving notice to

this society, or if he shall know of any deception or fraud being practised on the funds of the society by any other member, without giving immediate notice thereof to the secretary, and such proof thereof as may be in his power, or if he shall while receiving sick allowance, be found drinking in a public-house, beer-shop, or in any place connected therewith, or be found intoxicated, gambling, transacting any business, or serving in a shop, or imposing or attempting to impose on the funds by feigned sickness, or by any other deception, or doing any wilful act, whereby his recovery from sickness may be retarded, or if he shall refuse to declare off the funds of the society, as laid down hereinafter, he shall for ever be excluded from the society, and forfeit all his interest in the benefits or funds thereof.

AS TO LIFE ASSURANCE.

XL. Terms.

96.—The society will grant (according to Tables _____ appended to these rules) policies of life assurance to any person between the ages of _____ and _____ for any sum not exceeding £(100) to become payable at the end of one month after satisfactory proof shall have been given to the directors of his death.

97.—Any person so assuring shall give a reference to two respectable persons (one being of the medical profession, if required by the board) to corroborate his own statement of good health.

XLI. Forfeitures.

98.—Any life assurance policy issued by this society (together with all premiums paid in respect thereof) shall be forfeited and become void, if the monthly or other payments be not duly made, or if the person assured therein shall, without the permission of the board of directors first had and obtained, go beyond the limits allowed by his policy or by rule 89, or if he shall die by the hand of justice, or in, or in consequence of, a duel or fight, or by justifiable homicide, or by suicide; provided however that in the last-mentioned case, it shall be lawful, but not compulsory, for the directors to return to the representatives of the deceased, a sum not exceeding one-half of the total amount of premiums received on his policy, if the same has been two full years at least in force.

99.—If any policy of assurance shall become forfeited, so also shall any sum or sums which may have been added thereto by way of bonus.

XLII. *Special Risks.*

100.—In any case in which a person, on whose life an assurance may be effected by the society, shall go or travel beyond the limits allowed by rule 89 or by his policy, or shall insure any other risk not embraced in the said policy, it shall be lawful for the board of directors, upon such terms and conditions and upon the payment of such extra premiums as they may think proper, to enlarge the terms of the policy so as to embrace the increased risk.

XLIII. *Loss of Policy.*

101.—Should any member, who may be assured for a sum of money at death, lose or mislay his policy of assurance, he may procure another on application to the board of directors, on paying a fine of 2s. 6d., and giving such indemnity to the society as the directors may require; but if the policy cannot be produced after the death of the person assured thereby, by the person who, at the time of making application, shall, to the satisfaction of the board of directors, prove himself entitled to receive the sum assured by the said policy, it shall be lawful, but not compulsory, for the board of directors, notwithstanding the policy may be lost or mislaid, to pay the sum assured thereby, upon the personal indemnity, against the consequences of the loss or mislaying of such policy, of any person or persons, with whose character and responsibility the board of directors shall, in their discretion, be satisfied.

XLIV. *Payment of Claims.*

102.—A notice of the death of any member shall be furnished to the secretary, accompanied by a certificate of burial, signed by the minister officiating at the interment, or by a coroner, or some other competent person; and the amount assured shall be paid within one month after the next meeting of the board, or the directors may, at their discretion, if required, advance a portion thereof before the funeral of the deceased.

103.—The directors shall have power to require, where they may deem the same necessary, a satisfactory certificate from a householder, identifying the deceased with the person assured in the policy.

AS TO SICKNESS ASSURANCE.

XLV. *Terms.*

104.—The subscriptions payable for sickness allowance shall be according to Tables ——— appended to these rules.

105.—No member shall be allowed to assure for a weekly allowance in sickness exceeding three-fourths of his average weekly income or earnings.

106.—Any member assuring for a weekly sum in sickness, and also for a deferred annuity of not less than half the same weekly amount, shall be entitled to his full allowance during sickness for a period not exceeding fifty-two weeks whenever it shall occur, and half allowance thereafter as long as it shall continue; provided in all cases such allowance shall cease when the deferred annuity commences.

107.—Any member assuring for a weekly sum in sickness, but not also for such deferred annuity, shall be entitled during the continuance of any sickness to his full sickness allowance (or full pay) for fifty-two weeks, and to one-half (or half pay) for the remainder of the sickness, provided such sickness do not continue more than two years in the whole; but he shall not be entitled to full pay again before fifty-two consecutive weeks have elapsed from the last payment on account of any sickness; and any claim made by him on the funds before the expiration of such fifty-two weeks shall be considered as on account of the same sickness, and he shall receive half-pay only.

108.—When any such member shall have received fifty-two weeks of full pay on account of any one or more attacks of sickness, he shall be reduced to half-pay for any subsequent sickness, until he shall have been altogether off the funds for fifty-two consecutive weeks, when he shall again be entitled to full pay.

109.—No female member shall be allowed payment for any sickness during the first month after confinement; but every married female member who shall pay ——— per month in addition to her

other payments for not less than ten months previous to her confinement, shall receive ——— per week during the said month.

XLVI. *Allowance.*

110.—Any member claiming on the sickness fund shall give notice to the secretary in the form appended to these rules ; and his allowance shall commence on the same day, if the notice be received by the society before twelve o'clock, if after that time, on the following day. Such member shall then be supplied weekly with a sick paper, upon which the medical officer and visitors of the society shall enter regularly the dates when they see the sick member, and the then state of his health ; and on the following Saturday, and every Saturday while the sickness of such member lasts, his sick allowance for the preceding week shall be paid on production of his weekly sick paper at the offices of the society.

111.—Any member residing beyond the district where his premiums are paid, who may claim on the sickness fund, shall give notice to the secretary in the usual form, but accompanied with the certificate of a respectable medical practitioner residing in the locality, setting forth the nature of the member's disease, and its rendering him incapable of work. Such member's allowance shall then be forwarded to him, deducting the expenses of sending the same ; and this medical certificate shall be renewed every fortnight, or no further allowance will be sent.

112.—No member shall be required to pay his sick fund subscription during the time he may be receiving allowance from the fund, and credit shall be given him for such time, and on such terms as the Directors may deem just and proper, for any subscriptions which, during his sickness, may be due for other benefits assured by him.

XLVII. *Declaring off the Funds.*

113.—On the day when the medical officer shall declare a sick member to have recovered from his illness or incapacity for labour, his allowance shall cease ; and on receiving his last weekly allowance, the said member shall sign a declaration of recovery in the form appended to these rules.

114.—Should any sick member, on the report of the medical

officer, refuse so to declare off the sick fund, the directors shall appoint a committee of three members holding assurances against sickness, and two medical officers, to examine and report on the case ; and, should a majority of these five persons state that such member is in a fit state to resume his usual employment, he shall forthwith declare off the funds or be excluded from the society.

XLVIII. *Leaving Home.*

115.—No member receiving sick allowance, or claiming medical aid, shall leave home, except with the written permission of the medical officer, setting forth the hours at which he may walk out for air or exercise. Any member leaving home without such permission, or being absent from home at any other than the hours specified therein, shall be fined 2s. 6d. for the first offence, 5s. for the second, and for the third offence he shall be excluded from the society.

XLIX. *Limitation of Allowance.*

116.—No member shall be entitled to claim upon the funds or to receive medical attendance or medicine on account of any sickness with which he may have been wholly or partially afflicted at the time of his admission, or on account of any accident, illness, or incapacity for labour brought on or occasioned by permanent insanity, intemperance, or immorality, or by fighting, wrestling, or any unnecessary exertion or exercise (of which the medical officer of the society shall be the sole judge), or by any hurt received by working at any other than the ordinary trade of such member, as set forth by him in his declaration at the time of his admission.

117.—In case of palsy, blindness, accidents, or any affections likely to continue an indefinite period, and which do not entirely incapacitate a member, it shall be lawful for the member so afflicted, if he be able, partially to follow his employment, subject however to an arrangement with the board, who shall have power to fix the amount thereafter to be paid by the society, in respect of or in lieu of his allowance as assured. If the member shall be unable partially to follow his employment, the case shall be submitted to three arbitrators, who shall fix the amount thereafter to be paid him by the society.

118.—No sick allowance is to be paid to any member, who shall have been in arrear with his subscriptions or fines within two months of his claiming on the funds.

119.—No member confined in a lunatic asylum, or debtors' or criminal prison, shall receive any sick allowance during the period of his confinement, neither shall any member in the police force be entitled to sick pay for any injury he may receive in the performance of his duty, unless he shall have insured specially against such contingency; nor shall any member receive any allowance for sickness during such time as he or she shall be in a workhouse.

120.—In all cases of accident to the person, in which damages are awarded for the injury or injuries received, the society shall have a claim for sick allowance granted to the member during the illness consequent thereon, to be repaid to it from the amount of damages given.

121.—In cases of permanent bad health, or total inability to work arising in consequence of injuries, the society, having granted its bounden allowances, shall only have claim to certain proportion of the damages given, to be decided by arbitrators selected for the occasion. If no legal proceedings are taken by the individual member, the society may act on its own responsibility.

I. Medical Aid.

122.—Any member assured for an allowance in sickness may, by an additional subscription of ——— per month, become entitled to receive medical attendance and medicine from the medical officer of the society during sickness or accident. Any member may also assure the like benefit for any children, under ——— years of age, by an additional payment for each child, of ——— monthly.

123.—A member's right to receive medical advice or medicine, either for himself or his children, shall commence at the expiration of six months from the date of his first payment to assure the same, and shall cease only with his assurance against sickness. Any member entitled thereto may claim medical aid and medicine without declaring on the funds.

AS TO DEFERRED ANNUITIES.

LI. *Terms.*

124.—Any member may assure for a deferred *life* annuity for himself, or on the life of another, to commence at the age of sixty or upwards, and payable yearly, half-yearly, quarterly, or monthly, as may be previously agreed on.

125.—The subscriptions to assure a deferred annuity, according to Tables ————— shall cease to be paid as soon as the annuity commences.

AS TO ENDOWMENTS.

LII. *Terms.*

126.—Members of any age or occupation may assure for any sum of money from £5 to £—, as an endowment for themselves or their children, or on the lives of others, according to the Tables ————— appended to these rules.

LIII. *Payment of Claims.*

127.—The payment of any endowment shall be made within one month from the date of that meeting of the directors at which the validity of the claim shall be admitted by the board.

LIV. *Death of Assured.*

128.—Should any person assured for an endowment at a specified age, die before the attainment thereof, his representatives shall receive back the whole amount contributed, less a deduction towards the expenses of management after the rate of ——— per cent. per annum.

LV. *Death of Assurer.*

129.—The death of any person holding a policy of endowment on the life of a child, and any consequent cessation of payments thereon, shall not affect the interest of the child assured, as regards the premiums already paid, as an endowment shall still be granted to the child, on its attaining the prescribed age, proportionate to the amount of premiums paid.

LVI. *Notice of Claims.*

130.—Members assured for any deferred benefit (either annuity or endowment) shall, previous to the age at which such benefit is payable, give one month's notice of the same to the secretary, and shall, if required, produce satisfactory evidence of identity and of age.

[*Here should follow the Tables and Schedules of Forms, &c.*]

NEW DEPOSIT TABLES

FOR

SAVINGS' BANKS AND INDUSTRIAL ASSOCIATIONS.*

The following Tables are given in illustration of a system proposed with the view to give a Depositor a greater average rate of interest for his investment than that at present afforded by Savings' Banks, and at the same time to afford facilities for the withdrawal, at will, of a pre-arranged portion of the Deposit. The sum deposited is accordingly divided, in the outset, into two portions, one of which has been supposed to be withdrawable at a week's notice, the other at not less than six months. The latter portion, therefore, not being liable to abrupt withdrawal, can be invested at a higher rate of interest than the former. On this account two rates of interest are employed in the calculations, as will be seen on reference to the Tables. It is also a condition of the investment that the accruing *compound* interest thereon shall not be withdrawn until the withdrawal of the whole of the Deposit, an equivalent for this restriction being given in the investment from year to year, at the *higher* rate, of the total amount of each year's interest on the two portions of the Deposit.

The portions assumed in the Tables will probably, in most cases, be found sufficient, with care, to meet any ordinary contingency; and the delay which occurs in the removal of the remainder will operate beneficially as a check to hasty and reckless withdrawals. These preliminary observations will suffice to explain the system, and we now proceed to describe the arrangement of the Tables.

I. SINGLE DEPOSITS.

These consist of Tables I. to VI. inclusive, all of which are computed upon the same principle, but different rates of interest (See *Formulae* in *Appendix to Treatise on Building Societies*). The rates employed are cited at the head of each Table, and it is presumed that the headings and foot notes will be found sufficiently explanatory.

II. ANNUITY DEPOSITS.

These consist of Tables VII. to XII. inclusive, and show the result of a series of annual Deposits. It will be perceived that these Tables are

* If the Managers of a Savings' Bank prefer it, they can underwrite the Annuities herein referred to, with an Assurance Office.

computed at the same rates, respectively, as the previous six Tables. They are, in fact, obtained from those Tables by addition.

III. DEFERRED ANNUITIES.

These consist of Tables XIII., XIV. and XV., and are an adaptation of the principles developed in Tables I., II. and III., to the purchase of Deferred Annuities. The attention of the reader is particularly requested to these Tables. It will be perceived that the money deposited accumulates, during the stipulated period, without any reference to a law of mortality. The consequence of this is that a Depositor, who may, from any cause, find it advisable to withdraw before attaining the stipulated age, will receive a much larger sum, under these Tables, than he would under any other system of Deferred Annuities hitherto proposed. It is true that, were the same amount to be deposited in a Savings' Bank in purchase of an annuity, the *resulting annuity* would be somewhat larger than these Tables give; but, viewed as a *whole*, it is conceived that the plan herein delineated is much more advantageous. Thus a man at 30, who deposits £10 in a Savings' Bank, will at 60 obtain an annuity of £2. 19s. 7d.; whereas, Table XIII. would give him but £2. 11s. 11d. Suppose, however, that at the age of 55 he should withdraw or die, then he or his representatives would receive, under the above mentioned Table XIII., the sum of £22. 13s. 2d. The Savings' Bank would merely return the £10. (See Note to Table XIII.)

NOTE—The reader will observe, on examining the Tables, that the Columns relating to Deposits of £100 are not in all cases, exactly ten times the amount of the corresponding value for Deposits of £10. These discrepancies are occasioned by the suppression of fractional parts of a penny.

✍ For Tables of *Single Deposits* to assure sums payable at *death*, see Part I. of this division of the “Treatise,” and for *Annual Deposits*, see Tables XVI. and XVII. herein.

SINGLE DEPOSITS.

TABLE I.

Showing the Amount to which a Deposit of £10 or (£100) will accumulate at the end of any number of Years up to 10; on the condition that, after the first Year, One Half (or One Fourth) of the Sum deposited may be withdrawn, *without interest*, on giving one week's notice; the balance of the Deposit and the accumulated compound Interest remaining unwithdrawable till the end of the period, unless six months' notice of withdrawal be given.

Rates of Interest £3 10s. and £2 10s. per Cent., as explained at foot.

DEPOSIT OF £10.			DEPOSIT OF £100.		
No. of Years.	One Half withdrawable.	One Fourth withdrawable.	One Fourth withdrawable.	One Half withdrawable.	No. of Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	10 6 0	10 6 6	103 5 0	103 0 0	1
2	10 12 2	10 13 3	106 12 4	106 2 1	2
3	10 18 8	11 0 2	110 1 11	109 6 5	3
4	11 5 3	11 7 5	113 13 11	112 12 11	4
5	11 12 2	11 14 10	117 8 7	116 1 9	5
6	11 19 4	12 2 7	121 5 9	119 13 0	6
7	12 6 8	12 10 7	125 5 8	123 6 9	7
8	12 14 4	12 18 10	129 8 4	127 3 1	8
9	13 2 3	13 7 5	133 14 0	131 2 1	9
10	13 10 5	13 16 3	138 2 7	135 3 11	10

N.B.—This Table is computed according to formula No. I., Art. 3, in the Appendix, on the supposition that the *lower* rate of $2\frac{1}{2}$ per cent. is allowed on the withdrawable portion of the Deposit, and $3\frac{1}{2}$ per cent. on the unwithdrawable portion, as also upon the entire amount of the interest as it accumulates from year to year.

Example.—A person having deposited £100 will be entitled, at any time after the first year, to draw out 50, or £25, as the case may be, at a week's notice. Say he has retained the power to withdraw one-half, and that he exercises this power at the end of the 5th year. The amount at his credit at that moment is £116 1s. 9d., from which deducting the £50 withdrawn, there will remain £66 1s. 9d. to accumulate for the remaining 5 years (or until withdrawn under a six months' notice) at $3\frac{1}{2}$ per cent. compound interest. If, on the other hand, the whole amount of the Deposit be left undisturbed by the Depositor during the term, then the accumulated amount at the end of 10 years will be £135 3s. 11d.

TABLE II.

Showing the amount to which a Deposit of £10 (or £100) will accumulate at the end of any number of Years up to 10, on the principle of Table I.

Rates of Interest of £3 5s. and £2 10s. per Cent.

DEPOSIT OF £10.			DEPOSIT OF £100.		
No. of Years.	One Half withdrawable.	One Fourth withdrawable.	One Fourth withdrawable.	One Half withdrawable.	No. of Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	10 5 9	10 6 2	103 1 3	102 17 6	1
2	10 11 8	10 12 5	106 4 6	105 16 10	2
3	10 17 10	10 19 0	109 9 9	108 18 2	3
4	11 4 2	11 5 9	112 17 3	112 1 6	4
5	11 10 8	11 12 8	116 6 9	115 6 9	5
6	11 17 5	11 19 10	119 18 8	118 14 3	6
7	12 4 5	12 7 3	123 12 10	122 3 11	7
8	12 11 7	12 14 11	127 9 6	125 15 10	8
9	12 19 0	13 2 11	131 8 7	129 10 0	9
10	13 6 8	13 11 0	135 10 3	133 6 9	10

N.B.—The observations at the foot of Table I. apply in a similar manner to the results of this Table.

TABLE III.

Showing the Amount to which a Deposit of £10 (or £100) will accumulate at the end of any number of Years up to 10, on the principle of Table I.

Rates of Interest £3 2s. 6d. and £2 10s. per Cent.

DEPOSIT OF £10.			DEPOSIT OF £100.		
No. of Years.	One Half withdrawable.	One Fourth withdrawable.	One Fourth withdrawable.	One Half withdrawable.	No. of Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	10 5 7	10 5 11	102 19 4	102 16 3	1
2	10 11 5	10 12 1	106 0 8	105 14 3	2
3	10 17 5	10 18 4	109 3 9	108 14 1	3
4	11 3 7	11 4 11	112 8 10	111 15 9	4
5	11 9 11	11 11 7	115 16 0	114 19 4	5
6	11 16 6	11 18 6	119 5 3	118 5 0	6
7	12 3 3	12 5 8	122 16 8	121 12 7	7
8	12 10 3	12 13 0	126 10 3	125 2 5	8
9	12 17 5	13 0 7	130 6 3	128 14 4	9
10	13 4 10	13 8 6	134 4 7	132 8 7	10

N.B.—The observations at the foot of Table I. apply in a similar manner to the results of this Table.

TABLE IV.

Showing the amount to which a Deposit of £10 (or £100) will accumulate at the end of any number of Years up to 10, on the principle of Table I.

Rates of Interest 5 and 3 per Cent.

DEPOSIT OF £10.							DEPOSIT OF £100.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	8	0	10	9	0	104	10	0	104	0	0	1
2	10	16	5	10	18	5	109	4	6	108	4	0	2
3	11	5	2	11	8	5	114	3	9	112	12	2	3
4	11	14	6	11	18	9	119	7	11	117	4	10	4
5	12	4	3	12	9	9	124	17	4	122	2	1	5
6	12	14	5	13	1	3	130	12	2	127	4	2	6
7	13	5	1	13	13	3	136	12	9	132	11	4	7
8	13	16	5	14	5	11	142	19	5	138	3	11	8
9	14	8	2	14	19	3	149	12	5	144	2	1	9
10	15	0	8	15	13	2	156	12	0	150	6	3	10

N.B.—The observations at the foot of Table I. apply in a similar manner to the results of this Table.

TABLE V.

Showing the Amount to which a Deposit of £10 (or £100) will accumulate at the end of any number of years up to 10, on the principle of Table I.

Rates of Interest 6 and 3 per Cent.

DEPOSIT OF £10.							DEPOSIT OF £100.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	9	0	10	10	6	105	5	0	104	10	0	1
2	10	18	6	11	1	8	110	16	3	109	5	5	2
3	11	8	8	11	13	5	116	14	4	114	6	6	3
4	11	19	5	12	5	11	122	19	4	119	13	9	4
5	12	10	9	12	19	2	129	11	11	125	7	4	5
6	13	2	9	13	13	2	136	12	5	131	7	9	6
7	13	15	6	14	18	2	144	1	4	137	15	5	7
8	14	9	1	15	3	11	151	19	3	144	10	9	8
9	15	3	5	16	0	8	160	6	7	151	14	3	9
10	15	18	8	16	18	5	169	4	0	159	6	4	10

N.B.—The observations at the foot of Table I. apply in a similar manner to the results of this Table.

TABLE VI.

Showing the amount to which a Deposit of £10 (or £100) will accumulate at the end of any number of years up to 10, on the principle of Table I.

Rates of Interest 7 and 3 per Cent.

DEPOSIT OF £10.							DEPOSIT OF £100.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	10	0	10	12	0	106	0	0	105	0	0	1
2	11	0	8	11	4	10	112	8	5	110	7	0	2
3	11	12	2	11	18	7	119	5	9	116	1	6	3
4	12	4	5	12	13	3	126	12	10	122	4	0	4
5	12	17	6	13	9	0	134	10	1	128	15	1	5
6	13	11	6	14	5	10	142	18	5	135	15	4	6
7	14	6	7	15	3	10	151	18	6	143	5	5	7
8	15	2	7	16	3	1	161	11	2	151	5	11	8
9	15	19	9	17	3	9	171	17	4	159	17	10	9
10	16	18	2	18	5	9	182	18	0	169	1	8	10

N.B.—The observations at the foot of Table I. apply in a similar manner to the results of this Table.

It may further be observed that the system, as developed in one or other of the last three Tables, might be adopted with advantage by Industrial Associations (such as Friendly Societies and Building Societies) as an inducement to Investors. It gives them, upon the whole sum invested, an advantageous average rate of interest, and enables them to set free, at a brief notice, a considerable portion of the sum deposited, to meet unexpected emergencies.

ANNUITY DEPOSITS.

TABLE VII.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10; upon the condition that One Half (or One Fourth) of the aggregate of the Sums deposited may be withdrawn in the manner explained in Table I.

Rates of Interest £3 10s. and £2 10s. per Cent., as explained at foot.

DEPOSIT OF £10 PER ANNUM.							DEPOSIT OF £100 PER ANNUM.								
No. of Years.		One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.		One Half withdrawable.			No. of Years.		
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		
1		10	6	0	10	6	6	103	5	0	103	0	0	1	
2		20	18	2	20	19	9	209	17	4	209	2	1	2	
3		31	16	10	31	19	11	319	19	3	318	8	6	3	
4		43	2	1	43	7	4	433	13	2	431	1	5	4	
5		54	14	3	55	2	2	551	1	9	547	3	2	5	
6		66	13	7	67	4	9	672	7	6	666	16	2	6	
7		79	0	3	79	15	4	797	13	2	790	2	11	7	
8		91	14	7	92	14	2	927	1	6	917	6	0	8	
9		104	16	10	106	1	7	1060	15	6	1048	8	1	9	
10		118	7	2	119	17	10	1198	18	1	1183	12	0	10	

N.B.—This Table shows the result of a series of *Annual Deposits* of £10 (or £100), and is found by taking successively the sums of 1, 2, 3, &c., terms of the corresponding columns of Table I., the rates of interest in this being the same as in that Table, viz. $3\frac{1}{2}$ per cent. on the unwithdrawable portion, and the accumulating interest, and $2\frac{1}{2}$ per cent. on the withdrawable portion.

Example.—A person having deposited £10 per annum, say for 5 years, will be entitled at the end of that year to withdraw one-half or one-fourth of the aggregate of his deposits to that time (viz. £25 or £12 10s.) as the case may be, at a week's notice; the remainder, together with the interest, being left to accumulate at $3\frac{1}{2}$ per cent. till the end of the term, or until withdrawn under a six months' notice. [Vide Note to Table I.]

TABLE VIII.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10, upon the principle of Table VII.

Rates of Interest £3 5s. and £2 10s. per Cent.

DEPOSIT OF £10 PER ANNUM.			DEPOSIT OF £100 PER ANNUM.		
No. of Years.	One Half withdrawable.	One Fourth withdrawable.	One Fourth withdrawable.	One Half withdrawable.	No. of Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	10 5 9	10 6 2	103 1 3	102 17 6	1
2	20 17 5	20 18 7	209 5 9	208 14 4	2
3	31 15 3	31 17 7	318 15 6	317 12 6	3
4	42 19 5	43 3 4	431 12 9	429 14 0	4
5	54 10 1	54 16 0	547 19 6	545 0 9	5
6	66 7 6	66 15 10	667 18 2	663 15 0	6
7	78 11 11	79 3 1	791 11 0	785 18 11	7
8	91 3 6	91 18 0	919 0 6	911 14 9	8
9	104 2 6	105 11	1050 9 1	1041 4 9	9
10	117 9 2	118 11 11	1185 19 4	1174 11 6	10

N.B.—This Table is formed from Table II. in the same manner as Table VII. was formed from Table I. [Vide Note to Table VII.]

TABLE IX.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10, upon the principle of Table VII.

Rates of Interest £3 2s. 6d. and £2 10s. per Cent.

DEPOSIT OF £10 PER ANNUM.			DEPOSIT OF £100 PER ANNUM.		
No. of Years.	One Half withdrawable.	One Fourth withdrawable.	One Fourth withdrawable.	One Half withdrawable.	No. of Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	10 5 7	10 5 11	102 19 4	102 16 3	1
2	20 17 0	20 18 0	209 0 0	208 10 6	2
3	31 14 5	31 16 4	318 3 9	317 4 7	3
4	42 18 0	43 1 3	430 12 7	429 0 4	4
5	54 7 11	54 12 10	546 8 7	543 19 8	5
6	66 4 5	66 11 4	665 13 10	662 4 8	6
7	78 7 8	78 17 0	788 10 6	783 17 3	7
8	90 18 0	91 10 1	915 0 10	908 19 8	8
9	103 15 5	104 10 8	1045 7 1	1037 14 0	9
10	117 0 3	117 19 2	1179 11 8	1170 2 7	10

N.B.—This Table is formed from Table III. in the same manner as Table VII. was formed from Table I. [Vide Note to Table VII.]

TABLE X.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10, upon the principle of Table VII.

Rates of Interest 5 and 3 per Cent.

DEPOSIT OF £10 PER ANNUM.							DEPOSIT OF £100 PER ANNUM.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	8	0	10	9	0	104	10	0	104	0	0	1
2	21	4	5	21	7	5	213	14	6	212	4	0	2
3	32	9	7	32	15	10	327	18	3	324	16	2	3
4	44	4	1	44	14	7	447	6	2	442	1	0	4
5	56	8	4	57	4	4	572	3	6	564	3	1	5
6	69	2	9	70	5	7	702	15	8	691	7	3	6
7	82	7	10	83	18	10	839	8	5	823	18	7	7
8	96	4	3	98	4	9	982	7	10	962	2	6	8
9	110	12	5	113	4	0	1132	0	3	1106	4	7	9
10	125	13	1	128	17	2	1288	12	3	1256	10	10	10

N.B.—This Table is formed from Table IV. in the same manner as Table VII. was formed from Table I. [Vide Note to Table VII.]

TABLE XI.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10, on the principle of Table VII.

Rates of Interest 6 and 3 per Cent.

DEPOSIT OF £10 PER ANNUM.							DEPOSIT OF £100 PER ANNUM.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	9	0	10	10	6	105	5	0	104	10	0	1
2	21	7	6	21	12	2	216	1	3	213	15	5	2
3	32	16	2	33	5	7	332	15	7	328	1	11	3
4	44	15	7	45	11	6	455	14	11	447	15	8	4
5	57	6	4	58	10	8	585	6	10	573	3	0	5
6	70	9	1	72	3	11	721	19	3	704	10	9	6
7	84	4	7	86	12	1	866	0	7	842	6	2	7
8	98	13	8	101	16	0	1017	19	10	986	16	11	8
9	113	17	2	117	16	8	1178	6	5	1138	11	2	9
10	129	15	9	134	15	0	1347	10	5	1297	17	6	10

N.B.—This Table is formed from Table V. in the same manner as Table VII. was formed from Table I. [Vide Note to Table VII.]

TABLE XII.

Showing the Amount to which a Deposit of £10 (or £100) *per Annum* will accumulate at the end of any number of Years up to 10, on the principle of Table VII.

Rates of Interest 7 and 3 per Cent.

DEPOSIT OF £10 PER ANNUM.							DEPOSIT OF £100 PER ANNUM.						
No. of Years.	One Half withdrawable.			One Fourth withdrawable.			One Fourth withdrawable.			One Half withdrawable.			No. of Years.
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1	10	10	0	10	12	0	106	0	0	105	0	0	1
2	21	10	8	21	16	10	218	8	5	215	7	0	2
3	33	2	10	33	15	5	337	14	2	331	8	6	3
4	45	7	3	46	8	8	464	7	0	453	12	6	4
5	58	4	9	59	17	8	598	17	1	582	7	7	5
6	71	16	3	74	3	6	741	15	6	718	2	11	6
7	86	2	10	89	7	5	893	14	0	861	8	4	7
8	101	5	5	105	10	6	1055	5	2	1012	14	3	8
9	117	5	2	122	14	3	1227	2	6	1172	12	1	9
10	134	3	4	141	0	0	1410	0	6	1341	13	9	10

N.B.—This Table is formed from Table VI. in the same manner as Table VII. was formed from Table I. [Vide Note to Table VII.]

The attention of Industrial Associations is requested to the last three Tables. [Vide Note to Table VI.]

DEFERRED ANNUITIES.

TABLE XIII.

Showing the accumulated Amount, or the Life Annuity (payable half-yearly), which a single Deposit of £10 will entitle a Depositor to receive at the end of stipulated periods; the whole of the Deposit, together with the accumulated Interest, upon the principle of Table I., to be returnable at six months' notice, in case of decease of Depositor, or of his desiring to cancel the transaction before the close of the period. It being further provided that a Depositor may at any time, before entering on the Annuity, withdraw One Fourth of the Sum itself deposited, on giving one week's notice.

Rates of Interest £3 10s. and £2 10s. per Cent., as explained at foot.

ANNUITY TO COMMENCE AT 60.						
Present Age.	Accumulated Amount.			Corresponding Annuity.		
				Male.	Female.	
	£	s.	d.	£	s.	d.
20	37	9	7	3	12	8
25	31	13	4	3	1	5
30	26	15	6	2	11	11
35	22	13	2	2	3	11
40	19	3	10	1	17	2
45	16	5	5	1	11	7
50	13	16	3	1	6	9
55	11	14	10	1	2	9
ANNUITY TO COMMENCE AT 65.						
Present Age.	Accumulated Amount.			Corresponding Annuity.		
				Male.	Female.	
	£	s.	d.	£	s.	d.
20	44	7	7	5	3	11
25	37	9	7	4	7	9
30	31	13	4	3	14	2
35	26	15	6	3	2	8
40	22	13	2	2	13	1
45	19	3	10	2	4	11
50	16	5	5	1	18	1
55	13	16	3	1	12	4
60	11	14	10	1	7	6

N.B.—The columns in this Table headed 'Accumulated Amount,' are computed on the principle of Table I., and at the same rates of interest as that Table, viz. $3\frac{1}{2}$ per cent. on the unwithdrawable portion of the Deposit and the accumulated Interest, and $2\frac{1}{2}$ per cent. on the withdrawable portion. The columns headed 'Corresponding Annuity' are deduced from the English Life Table at 3 per cent. An example is subjoined.

* *Example.*—A person aged 30 having deposited £10 will be entitled, on attaining the age of 60, to receive either a gross sum of £26 15s. 6d., or an Annuity of £2 11s. 11d. for the remainder of Life. Should he withdraw or die before attaining that age,—say for example at 55,—then he or his representatives would, in that case, receive, six months thereafter, the sum of £22 13s. 2d., or the amount corresponding to 25 years deposit, which is the same as at age 35, for 60.

TABLE XIV.

Showing the Accumulated Amount, or the Corresponding Annuity (payable half-yearly), which a single Deposit of £10 will entitle a Depositor to receive at the end of stipulated periods, on the principle of Table XIII.

Rates of Interest £3 5s. and £2 10s. per Cent.

ANNUITY TO COMMENCE AT 60.						
Present Age.	Accumulated Amount.			Corresponding Annuity.		
				Male.	Female.	
	£	s.	d.	£	s.	d.
20	34	8	11	3	6	10
25	29	8	10	2	17	1
30	25	3	6	2	8	10
35	21	10	10	2	1	9
40	18	8	10	1	15	9
45	15	16	0	1	10	8
50	13	11	0	1	6	3
55	11	12	8	1	2	7
ANNUITY TO COMMENCE AT 65.						
Present Age.	Accumulated Amount.			Corresponding Annuity.		
				Male.	Female.	
	£	s.	d.	£	s.	d.
20	40	6	4	4	14	5
25	34	8	11	4	0	8
30	29	8	10	3	8	11
35	25	3	6	2	18	11
40	21	10	10	2	10	5
45	18	8	10	2	3	2
50	15	16	0	1	17	0
55	13	11	0	1	11	9
60	11	12	8	1	7	3

N.B.—The observations at the foot of Table XIII. apply in a similar manner to the results of this Table.

TABLE XV.

Showing the Accumulated Amount, or the corresponding Annuity, (payable half-yearly), which a single Deposit of £10 will entitle a Depositor to receive at the end of stipulated periods, on the principle of Table XIII.

Rates of Interest £3 2s. 6d. and £2 10s. per Cent.

ANNUITY TO COMMENCE AT 60.									
Present Age.	Accumulated Amount.			Corresponding Annuity.					
				Male.			Female.		
	£	s.	d.	£	s.	d.	£	s.	d.
20	33	0	7	3	4	1	3	1	1
25	28	7	10	2	15	1	2	12	6
30	24	8	3	2	7	4	2	5	1
35	21	0	0	2	0	9	1	18	10
40	18	1	7	1	15	0	1	13	5
45	15	11	5	1	10	2	1	8	9
50	13	8	6	1	6	0	1	4	10
55	11	11	7	1	2	5	1	1	5
ANNUITY TO COMMENCE AT 65.									
Present Age.	Accumulated Amount.			Corresponding Annuity.					
				Male.			Female.		
	£	s.	d.	£	s.	d.	£	s.	d.
20	38	8	10	4	10	0	4	5	7
25	33	0	7	3	17	4	3	13	6
30	28	7	10	3	6	6	3	3	2
35	24	8	3	2	17	2	2	14	4
40	21	0	0	2	9	2	2	6	9
45	18	1	7	2	2	4	2	0	3
50	15	11	5	1	16	5	1	14	8
55	13	8	6	1	11	5	1	9	11
60	11	11	7	1	7	1	1	5	9

N.B.—The observations at the foot of Table XIII. apply in a similar manner to the results of this Table.

NEW SYSTEM OF ASSURANCE.

LIFE ASSURANCE

BY

ANNUAL DEPOSIT PREMIUMS.

TABLE XVI.

Showing the *Annual Deposit* Premium to Insure £100, receivable at Death, with a return by the Office, in addition, of all the Premiums paid but the first.

				£	s.	d.
Age 20	Annual Deposit Premium			2	1	6
„ 25	„	„	„	2	10	1
„ 30	„	„	„	3	1	3
„ 35	„	„	„	3	15	1
„ 40	„	„	„	4	14	9
„ 45	„	„	„	6	0	4
„ 50	„	„	„	8	1	3
„ 55	„	„	„	11	10	4
„ 60	„	„	„	16	17	0
„ 65	„	„	„	24	3	6
„ 70	„	„	„	37	13	2
„ 75	„	„	„	59	4	0

Example.—A Deposit paid annually of £6 0s. 4d. at age 45, will secure £100 at death; and, in addition, the family, or representatives of the deceased, will receive back all the *premiums* paid but the first.

NEW SYSTEM OF LIFE ASSURANCE.

TABLE XVII.

Annual premium to Assure £100 for the whole term of life, payable at Death, Interest in the mean time being paid each succeeding year to the Assurer on all premiums he has paid.

Age.				Age.				Age.			
	£	s.	d.		£	s.	d.		£	s.	d.
20	2	17	3	39	4	3	4	58	7	9	6
21	2	18	3	40	4	5	4	59	7	15	7
22	2	19	3	41	4	7	4	60	8	1	8
23	3	0	3	42	4	9	5	61	8	7	6
24	3	1	4	43	4	11	6	62	8	13	9
25	3	2	6	44	4	13	9	63	9	0	3
26	3	3	8	45	4	16	1	64	9	7	5
27	3	5	0	46	4	18	7	65	9	15	3
28	3	6	3	47	5	1	4	66	10	3	10
29	3	7	7	48	5	4	4	67	10	13	3
30	3	8	10	49	5	7	6	68	11	3	7
31	3	10	2	50	5	11	6	69	11	15	3
32	3	11	6	51	5	14	10	70	12	7	11
33	3	13	0	52	5	18	11	71	13	0	1
34	3	14	6	53	6	3	3	72	13	17	1
35	3	16	2	54	6	7	9	73	14	11	11
36	3	17	10	55	6	12	9	74	15	6	5
37	3	19	7	56	6	18	0	75	15	19	6
38	4	1	5	57	7	3	8				

By the above table Assurers would secure three advantages:—

1st.—A fixed *diminution* each year in their *premiums*.

2nd.—A limited number of payments, as they practically cease as soon as the aggregate interest on the past premiums paid equals one year's premium.

3rd.—A deferred annuity for old age is secured equal to the sum of the interests.

Thus a person aged 25, might, if the rate of interest allowed were 4 per Cent., by a premium of £3 2s. 6d. for the first year, £3 for the second year, and so on, decreasing 2s. 6d. per annum, until the twenty-fifth year, secure in addition to the sum of £100 payable at death, a deferred increasing annuity, to commence on attaining the age of 50.

OLD AGE AND ENDOWMENT TABLE.

Showing the amount of Savings that would be effected by accumulating £6 a year with interest.

AT END OF YEARS.	AMOUNT OF SAVINGS AT									AT END OF YEARS.
	3 per Cent.			4 per Cent.			5 per Cent.			
	£	s.	d.	£	s.	d.	£	s.	d.	
1	6	0	0	6	0	0	6	0	0	1
2	12	3	8	12	4	10	12	6	0	2
3	18	10	11	18	14	8	18	18	4	3
4	25	2	0	25	9	8	25	17	3	4
5	31	17	1	32	10	0	33	3	1	5
6	38	16	3	39	16	0	40	16	3	6
7	45	19	6	47	7	11	48	17	1	7
8	53	7	1	55	5	9	57	5	11	8
9	60	19	3	63	10	0	66	3	3	9
10	68	15	9	72	0	10	75	9	5	10
11	76	17	0	80	18	5	85	4	10	11
12	85	3	1	90	3	2	95	10	1	12
13	93	14	2	99	15	3	106	5	7	13
14	102	10	5	109	15	1	117	11	5	14
15	111	11	10	120	2	11	129	9	6	15
16	120	18	10	130	19	0	141	18	11	16
17	130	11	5	142	3	9	155	0	11	17
18	140	9	9	153	17	6	168	15	11	18
19	150	14	1	166	0	7	183	4	9	19
20	161	4	6	178	13	5	198	8	0	20
21	172	1	3	191	16	5	214	6	5	21
22	183	4	5	205	9	10	231	0	8	22
23	194	14	5	219	14	2	248	11	9	23
24	206	11	3	234	10	0	267	0	3	24
25	218	15	2	249	17	7	286	7	4	25
26	231	6	5	265	17	5	306	13	8	26
27	244	5	2	282	10	2	328	0	5	27
28	257	11	9	299	16	2	350	8	5	28
29	271	6	4	317	16	0	373	18	10	29
30	283	9	1	336	10	3	398	12	8	30
31	300	0	4	355	19	5	424	11	4	31
32	315	0	5	376	4	3	451	15	11	32
33	330	9	5	397	5	2	480	7	9	33
34	346	7	8	419	3	0	510	8	1	34
35	362	15	6	441	18	4	541	18	5	35

Example.—A person setting aside £6 a year, or 10s. a month, for a child aged 3 years, would, with interest at 4 per Cent. have accumulated £153 17s. 6d. by the time the child attained the age of 21.

In case of previous death, or inability to continue the payments, the amount paid could be returned with interest at 3 per Cent., less — per Cent. towards expenses of bank or society.

* SUPPLEMENTARY

CHURCH PROPERTY & COPYHOLD TABLES.

	Tables	Page	Instructions and Practical Remarks. Page
Advowsons	T	5	5
Dilapidations at Death—Present			
Value of	(IV & V)	(67)	4
Fines every Seven Years, &c. ...	R	(72) and 4	(72)
Fines at Death		(67)	(61)
Fines in Perpetuity		(41)	(41)
Ground Rents	Q	(42)	(40)
Heriots		(67)	(62)
Income—Value of for Life	S	4	4
Leases, value of—			
For Single Life p. 39, & S		4	(38)
For the longest of three lives		(Appx. 13)	(Appx. 12)
For a term of years	Q	3	3
For two lives	X	6	(61)
Lives, Exchange of		{ Note 3 to Table Q	(Appx. 12)
Next Presentations	U	5	(Appx. 6)
Policies, value of	S	4	4
Rack Rents, value of	Q	(42)	(40)
Rent Charges, value of	Q	(42)	(40)
Repayment of Charge on Property		(54)	(52)
Reversions, value of	S	4	(67)
Sinking Fund to accumulate £100 at the end of any number of years		(53) Note 2 to Table Q	(52)
Sinking Fund to provide for Di- lapidations at Death		(55)	(66)
Term Annuity—Amount of	Q		
Time in which Money doubles, &c.		(59)	
Tithes, value of	Q	(42)	

* For other Tables see the "Treatise on the Enfranchisement of Copyhold, Life Leasehold, and Church Property," to which the figures above in brackets refer.

(4th Edition, 192 pages, 3s. 6d.)

TABLE P.

Showing the AMOUNT that £100 will *accumulate* to with *compound interest* at the end of a given *term of years*.

Term.	AT 3 per cent.	AT 5 per cent.	Term.	AT 3 per cent.	AT 5 per cent.
1	103.00	105.00	10	134.39	162.89
2	106.09	110.25	15	155.80	207.89
3	109.27	115.76	20	180.61	265.33
4	112.55	121.55	25	209.38	338.64
5	115.93	127.63	*30	242.73	432.19
6	119.41	134.01	35	281.39	551.60
7	122.99	140.71	40	326.20	704.00
8	126.68	147.75	45	378.16	898.50
9	130.48	155.13	50	438.39	1146.74

* EXAMPLE.—£100 will amount at the end of 30 years to £242. 14s. 7d., if interest be made at the rate of 3 per cent. per annum, or to £432 3s. 10d. at 5 per cent.

Notes:—1.—To find the *present value* of a sum of money payable at the end of any number of years, divide that sum by the amount in the above Table and multiply by 100.

2.—To find the amount of £100 at the end of any number of years not given in the above Table, take the product of the figures opposite any two terms in the Table, which, added together, would make up the term required, and divide by 100. Thus, the amount of £100 at the end of 33 years, (30 years and 3 years), is, at 5 per cent., (£432.19 × 1.1576) or £500.31. Again, the amount of £100 at 3 per cent. at the end of 100 years (50 + 50) is (£438.39 × 4.3839), or £1921.86.

3.—As to the time in which Money Doubles, see note, p. 59, "Treatise on Copyholds," for our remarkable theorem, that—for all rates per cent. under 10 per cent., the number of years in which a sum of money will Double itself at compound interest, is simply 70 divided by the rate per cent.

EXAMPLES.—1.—Divide 70 by the rate of interest per cent., and take that whole number which is nearest to the quotient obtained.

Thus, if the rate of interest be—

2 per cent. then the number of years will be $\frac{70}{2}$ or 35 years nearly.

3½ " " " $\frac{70}{3\frac{1}{2}}$ " 20 " "

5 " " " $\frac{70}{5}$ " 14 " "

8 " " " $\frac{70}{8}$ " 9 " "

10 " " " $\frac{70}{10}$ " 7 " "

2.—The time in which money doubles being thus ascertained, to find the further time in which it will become *threefold*, divide the doubling period by 1.70; *fourfold*, by 2.40; *fivefold*, by 3.10; *sixfold*, by 3.80; and so on, the divisor increasing in arithmetical progression by .70 each time.

Thus, since money doubles at 5 per cent. in 14 years, it would become *threefold* in $\frac{14}{1.70}$ or eight years more, making 22 together; *fourfold*, in $\frac{14}{2.40}$ or six years more, or 28 years altogether; and so on.

See also Division II of our "Treatise on Associations for Provident Investment" (1847) p. 22, for the Mathematical Analysis.

TABLE Q.—ANNUITIES FOR TERMS OF YEARS.

I.—*Present value*, for a given term of years, of £100 *per annum*, payable at the *end* of each year.

Term	3 per cent.	5 per cent.	Term.	3 per cent.	5 per cent.
1	97.09	95.24	40	2311.48	1715.91
2	191.35	185.94	45	2451.87	1777.41
3	282.86	272.32	50	2572.98	1825.59
4	371.71	354.60	55	2677.44	1863.35
5	457.97	432.95	60	2767.56	1892.93
6	541.72	507.57	65	2845.29	1916.11
7	623.03	578.64	70	2912.34	1934.27
8	701.97	646.32	75	2970.18	1948.50
9	778.61	710.78	80	3020.08	1959.65
10	853.02	772.17	85	3063.12	1968.38
15	1193.79	1037.97	90	3100.24	1975.23
20	1487.75	1246.22	95	3132.27	1980.59
25	1741.31	1409.39	100	3159.89	1984.79
30	1960.04	1537.25			
35	2148.72	1637.42	Per- petuity.	3333.33	2000.00

II.—Amount that £100 *a-year*, paid at the end of each year, will accumulate to with *compound interest*, at the end of a given term of years.

Term.	3 per cent.	5 per cent.	Term.	3 per cent.	5 per cent.
1	100.00	100.00	35	6046.21	9032.03
2	203.00	205.00	40	7540.13	12079.98
3	309.09	315.25	45	9271.99	15970.02
4	418.36	431.01	50	11279.69	20934.80
5	530.91	552.56	55	13607.16	27271.26
6	646.84	680.19	60	16305.34	35358.37
7	766.25	814.20	65	19433.28	45679.80
8	889.23	954.91	70	23059.41	58852.85
9	1015.91	1102.66	75	27263.09	75665.37
10	1146.39	1257.79	80	32136.30	97122.88
15	1859.89	2157.86	85	37785.70	124508.71
20	2687.04	3306.60	90	44334.89	159460.73
25	3645.93	4772.71	95	51927.20	204069.35
30	4757.54	6643.88	100	60728.77	261002.52

Notes.—1.—To find the annuity which £100 will purchase, divide £100 by the amount in Table Q, moving the decimal point two places to the left. Thus, £100 will purchase for 10 years, at 3 per cent., an Annuity of (£100 ÷ 8.5302) or £11.72 per annum.

2.—*The Sinking Fund to produce £100 is, in like manner, the reciprocal of the amount of £100 a year, moving the Decimal point four places to the right.* (See note 1 above.)

3.—To calculate the *Commutation of Leases*, on one or more lives, into *Leases for terms of years*, this Table should be used in conjunction with Tables S and X. Thus, by Table S, at 5 per cent., the present value of a Lease, of which only one life is in existence (say a male aged 40) is £1411 per cent.: in Table Q, 5 per cent. column, the present value of an Annuity for 25 years is £1409 per cent.: therefore, the tabular equivalent term certain to a lease on a male life aged 40 is 25 years. A practical margin must however, be deducted to provide for the circumstance that Tables of Mortality are deduced from a large average of lives, and, therefore, require to be modified when calculations are made dependent on only 1, 2, or 3 lives. Leases on lives are never so good as the tabular rate for equivalent Terms certain.

4.—For other rates of interest than 3 or 5 per cent., see Tables IX and X, p. 305, 306, Division II, *Treatise on Associations for Provident Investment*. (7s. 6d.)

TABLE R.

RENEWAL FINES.

To find the Amount of Fine that should be paid for the privilege of Renewal in a Lease worth £100 a year. This is the same thing as the present Value of a *Deferred Term Annuity* of £100 to commence at the expiration of a present term of years.

EXAMPLE.—The present Value of the Renewal of an Annuity or Lease for 40 years, of which 15 are *expired*, is the present value of a *term Annuity* deferred 25 years, and is found by deducting from the present value of an Annuity for 40 years, the present Value of an Annuity for 25 years, which is the period remaining *unexpired* of the original lease.—(See previous Table, Q. I.)

TABLE S.

Showing the PRESENT VALUE of £100 a year, payable at the *beginning* of the year, for LIFE, according to the provisions of Sect. 12 of the Act 17 and 18 Vict., c. 116. (p. 40, *Treatise on Copyholds*.)

[If the Annuity be payable at the END of each year, deduct £100.]

Age.	3 per cent.		5 per cent.		Age.	3 per cent.		5 per cent.	
	Males.	Females	Males.	Females		Males.	Females	Males.	Females
10	2420.4	2417.8	1753.4	1748.1	50	1462.7	1512.5	1218.3	1251.9
15	2322.3	2321.5	1705.6	1700.4	55	1288.9	1340.3	1097.5	1134.1
20	2223.3	2234.3	1656.6	1659.0	60	1105.7	1161.7	962.6	1005.2
*25	2127.0	2143.9	1609.6	1615.5	65	931.9	981.0	828.8	867.7
30	2019.4	2044.2	1553.9	1565.2	70	768.4	808.4	697.4	730.2
35	1899.5	1933.7	1488.2	1506.5	75	621.2	654.1	574.5	602.2
*40	1766.9	1810.5	1411.2	1437.3	80	495.7	523.7	466.1	490.4
45	1621.5	1671.5	1321.8	1354.1	85	394.1	418.7	375.8	397.7

* EXAMPLE.—The present Value of an income of £100 a year, payable at the beginning of every year of the existence of a male life aged 25, at 3 per cent. interest, is £2127; in like manner, the present value of £100 a year during the existence of a female life aged 40, at 5 per cent. interest, is £1437.3 or £1437. 6s.

NOTE.—To find the present Value of £100, payable at the end of the year in which any person may die, as for example, the *Single Premium* for an Assurance, or the *purchase-money of a Reversion* to £100, multiply the amount in the above Tables by .0291 if at 3 per cent., or .0476 if at 5 per cent., and subtract the product from £100. The result is the value.

EXAMPLE.—The present Value of £100 payable at death of a male life age 25, at 3 per cent., is £100 less $(2127 \times .0291)$ or £100 less £61.9 = £38.1.

(See also Tables IV. and V. at page 67, "*Treatise on Copyholds*.")

TABLE T.

Showing the Present Value of the Advowson of a Living of £100 a year *net*, after the death of the present Incumbent. (Under 17 & 18 Vict. c. 116, s. 12)

[Deductions should be made from the gross Value of the Living, for the Value of the Incumbent's *personal services*, or the stipend of a curate; also for the usual and any special Charges he may have to pay every year, &c.]

Present Incumbent's Age.	Interest 5 per cent.	Interest 7 per cent.	Present Incumbent's Age.	Interest 5 per cent.	Interest 7 per cent.
25	490.4	240.6	55	1002.5	574.5
30	546.1	272.2	60	1137.4	677.0
35	611.8	311.0	65	1271.2	777.9
40	688.8	359.2	*70	1402.6	888.8
45	778.2	416.9	75	1525.5	993.7
50	881.7	483.3	80	1633.9	1087.0

* EXAMPLE.—The advowson of a living of £100 a year net is worth £1402.6 or £1402. 12s., if the age of the present Incumbent is 70, and interest of money be taken at 5 per cent.

NOTE.—This Table gives also the Present Value of a *Freehold Estate in Reversion*, after death of life in possession.

TABLE U.

NEXT PRESENTATIONS.

In practice, these are estimated in two ways:—

1°—If the successor's age be *not known now*, nor until the death of the present Incumbent; then the present value is that given in the following Table, wherein the age of the person to be presented hereafter is assumed to be then the *youngest possible*, viz., 25.

Present Incumbent's age.	Value of next Presentation to a living of £100 a year <i>net</i> , after all deductions.	
	5 per cent.	7 per cent.
25	375.9	201.90
30	418.5	228.42
35	468.9	260.98
40	527.0	301.72
45	597.2	349.85
50	676.0	403.81
55	768.4	482.10
60	872.4	568.11
65	973.8	652.78
70	1075.2	745.18
75	1168.6	833.85
80	1252.3	912.17

* EXAMPLE.—The Value of the next Presentation to a living of £100 a year net, is worth (at 7 per cent interest) £482.1, or £482. 2s., if the present Incumbent's age is 55, and that of his successor when appointed 25.

2°—If, however, the next presentation is purchased with the view of presenting some particular person, whose age is *now known*, then the value of the presentation is found by deducting,—from the value of an annuity at his present age, according to Table S,—the value of an annuity on the *joint lives* of himself and the present Incumbent, according to Table X. (See Example p. 55, *Treatise on Copyholds*.)

This distinction should be remembered in submitting a Case to an Actuary.

The above are subject, however, to the practical deductions for Queen Anne's Bounty, &c.

TABLE X.

Showing the present value of an ANNUITY of £100, on Two JOINT LIVES, payable at the *beginning* of each year, under 17 and 18 Vict. c. 116. s. 12.

(If the Annuity be payable at the END of each year, deduct £100 from the value in the following Table.)

Ages.	10		15		20		25	
	3 per cent.	5 per cent.	3 per cent.	5 per cent.	3 per cent.	5 per cent.	3 per cent.	5 per cent.
80	508.7	477.7	506.1	475.4	505.1	473.0	503.0	471.2
75	616.2	570.9	612.6	562.5	610.9	563.3	607.5	560.5
70	767.7	695.3	762.3	690.7	759.5	684.9	754.3	680.6
65	929.9	825.1	922.2	818.8	917.6	815.2	909.6	808.8
60	1068.3	929.2	1058.1	921.0	1051.2	915.9	1040.2	907.3
55	1241.4	1058.3	1227.7	1047.8	1218.0	1035.5	1202.9	1024.2
50	1402.4	1171.4	1384.8	1158.6	1371.5	1149.2	1351.7	1134.9
45	1528.9	1252.9	1507.3	1239.7	1490.3	1228.1	1465.5	1208.8
40	1632.8	1315.5	1607.6	1298.1	1586.2	1284.4	1556.0	1264.2
35	1730.3	1373.0	1700.7	1353.6	1674.7	1337.5	1638.2	1314.2
30	1814.8	1421.0	1780.5	1399.2	1749.4	1380.8	1706.4	1354.6
25	1891.5	1463.8	1852.6	1439.9	1815.8	1419.2	1766.0	1390.0
20	1958.9	1506.9	1914.6	1480.9	1872.2	1457.7		
15	2020.6	1534.5	1970.9	1506.3				
10	2075.3	1564.5						
Ages.	30		35		40		45	
	3 per cent.	5 per cent.	3 per cent.	5 per cent.	3 per cent.	5 per cent.	3 per cent.	5 per cent.
80	499.6	468.2	497.6	466.5	493.2	462.5	491.7	458.1
75	602.7	556.3	597.3	553.5	591.1	548.1	588.6	544.2
70	747.0	674.5	738.0	670.3	729.0	*662.7	724.1	656.7
65	899.3	800.5	886.6	793.9	873.6	779.3	864.3	772.5
60	1026.6	896.6	1015.0	887.7	996.8	869.2	981.1	858.1
55	1184.7	1010.5	1162.1	998.4	1136.7	979.3	1111.5	957.4
50	1328.0	1111.9	1298.1	1095.7	1263.0	1070.9	1226.6	1046.9
45	1435.7	1187.9	1404.4	1167.4	1359.1	1136.6	1310.4	1099.6
40	1519.2	1235.5	1474.7	1210.7	1419.1	1174.4		
35	1593.9	1286.0	1540.6	1256.7				
30	1654.4	1319.5						

Errata in Mathematical Appendices.

IN APPENDIX ON PROBABILITIES.

Page 6, formula (5), *for* $(F + f_3)^3$ *read* $(F + f_3)^{p_3}$

Page 13, line 6, *for* $(F' - 9,200)^{\frac{1}{5}}$ *read* $(F' - 9,200)^{\frac{1}{2}}$

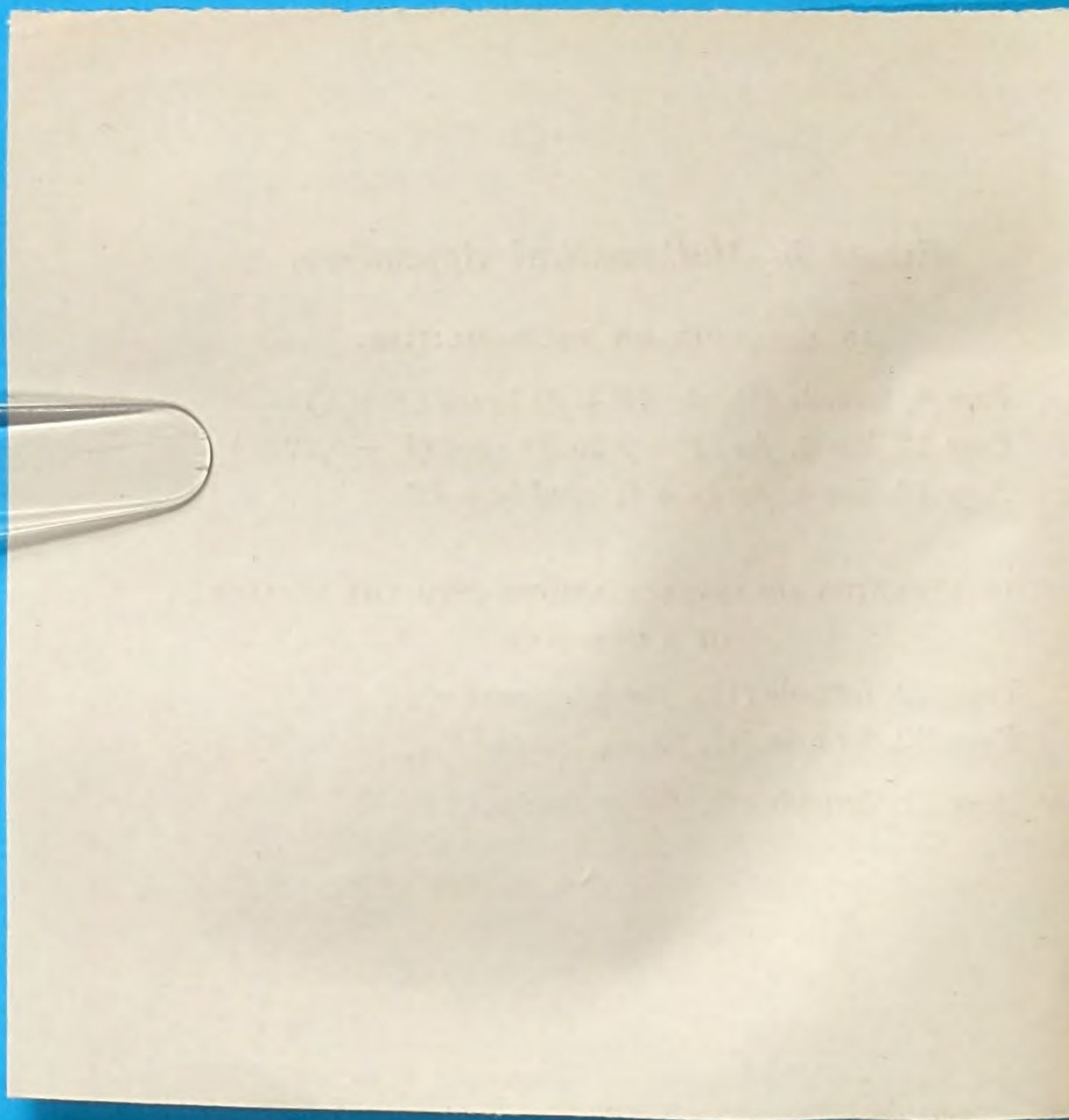
Page 14, line 4, *for* $(g + l)$ *read* $(g + l)^n$

IN APPENDIX ON INVESTIGATIONS INTO THE AFFAIRS OF A COMPANY.

Page 22, formula (11), *for* $\pi_{x \div n}$ *read* $\pi_{x + n}$

Page 30, formula (4), *for* $\alpha'_{x_1 \frac{1}{g}}$ *read* $\alpha'_{x_1 \frac{1}{gn}}$

Page 31, formula (8), *for* p^x *read* p_x



APPENDIX

ON

MORAL AND MATHEMATICAL EXPECTATION IN PROBABILITIES.

Art. 1.—In this Section we propose to illustrate, as briefly as the subject will admit, the distinction laid down by Laplace and other celebrated writers on Probability between *Mathematical* and *Moral* Expectation, which it is most important should be thoroughly understood by all who are engaged in Assurance business, or in any operations connected with events of a contingent character.*

Mr. Galloway has observed that in the theory of Probabilities the term *Expectation* is used to denote the value of a contingent Benefit, multiplied by the probability of the event taking place on which it depends. A little reflection will show that the Benefit should not be estimated with respect to its *absolute* value, but to the amount of *relative* advantage it affords the individual who is to receive it. Hence, when the circumstances of the individual are *not* taken into consideration, and regard is had merely to the absolute value of the benefit, the product of its amount by the chance of receiving it is the *Mathematical Expectation*; but when such circumstances are regarded, a Relative or moral value, dependent upon them, is assigned to the benefit,—the product of which by the chance of obtaining it is termed the *Moral Expectation*.

2.—By way of illustration, there is the common error, which is made in the measurement of Life contingencies, of assuming that estimates, which are true on the average of a large number of cases, are equally so in isolated instances; and actuarial opinions are not unfrequently given as a guide to purchasers of property dependent on the existence of human life, which, being deduced from Tables of Mortality constructed on the basis of a large number of lives, are not applicable to cases where but two or three lives are concerned.

* [For more extensive discussion of the theory of probabilities than would come within the range of this Treatise, we refer our readers to the works of Laplace and Poisson, which have been rendered into a most elegant form by our late lamented friend Mr. Galloway. Although it is in the works of Laplace and Poisson that the higher and more abstruse part of the theory of probabilities must be studied, yet a very clear explanation of the principles of the science, together with many interesting remarks on the uses and application of the theory, is to be found in the valuable little work of Lacroix, *Traité Élémentaire du Calcul des Probabilités*: Paris, 1833.]

3.—Thus, for instance, the value of a single Annuity, offered for sale, on a life aged 60, is of larger mathematical value, according to mortality tables, whatever be the rate of interest assumed, than, morally speaking, it would be worth the while of a purchaser to give for it, as in making his purchase he would have to guard against the chance of premature decease, which, although in a large number of cases likely to be compensated by Retarded deaths of other lives, would be fatal to the profit of his investment when occurring on one single purchase.*

4.—In like manner, in valuations of Leases on lives, for the purpose of substituting a *Term certain* for the Life Lease, a common error is made, of treating the *mathematical* value of the term certain as exactly equivalent to the value shown by the mortality table for the annuity on the life or lives involved, whereas considerations of *moral expectation* enter, which depend upon the number of similar cases the parties concerned are interested in.

Of Mathematical Expectation.

5.—This is estimated as follows:—

Suppose P and Q to be engaged in play. Let p and q be the respective probabilities of P 's and Q 's winning a game, upon the issue of which an amount, S , is staked: then the mathematical expectation of P is $p.S$, and that of Q is $q.S$. Now, if P and Q were to purchase these expectations, the respective amounts they ought to pay for them, or, in other words, to stake on the issue of the game, in order that they may play on equal terms, must be proportional to the expectations or probabilities of winning the game. If therefore P_1 be the sum staked by P , and Q_1 the sum staked by Q , we have

$$p.S : q.S :: P_1 : Q_1$$

or

$$p : q :: P_1 : Q_1$$

and consequently $p.Q_1 = q.P_1$.

* [Hence arises the necessity, to Isolated purchasers, of actually charging for the Insurance in some office of the life upon which the Annuity depends, instead of making the net provision, π_x , for a sinking fund, in the formula for the value of an annuity due, α_x , or $\frac{1}{d + \pi_x}$. This is effected by putting in the denominator, the office premium, p_x , for π_x , thus producing a value considerably less than α_x .]

Now, suppose the amount played for = the stakes, or

$$P_1 + Q_1 = S$$

then, since P expects to gain Q_1 , the probability of winning which is p , we have, for the mathematical value of P 's expectation of gain,

$$p \cdot Q_1$$

and in a similar manner we find the value of Q 's expectation of gain,

$$q \cdot P_1.$$

Hence it is evident that when the stakes of each are in proportion to their respective probabilities of winning, the mathematical expectations of each player are equal; so that, subsequently to the deposit of the stakes, and prior to the decision of the event, the players may, without advantage or otherwise on either side, exchange places. Also, since the sum which the one must gain is equal to that which the other must lose, the product of $q \cdot P_1$, which is Q 's expectation of gain, may be regarded as P 's expectation of loss, or, if taken with a negative sign, as part of P 's whole expectation, which then becomes

$$p \cdot Q_1 - q \cdot P_1$$

But

$$p \cdot Q_1 - q \cdot P_1 = 0$$

consequently, P 's condition prior to the decision of the event is in nowise affected, speaking *mathematically*, by his having staked on the issue of the game.

6.—This result is correct, for although on a single trial the player P must either lose P_1 or gain Q_1 , that is, either augment or diminish his fortune, yet if the play be undertaken on terms of mathematical equality and continue to a sufficient number of games, the probability, that the sum gained or lost *in the long run* shall be practically nothing, or that the sums gained and lost shall be very nearly equal, amounts to a certainty. (See Article 32, at end.)

7.—It is however practically impossible to suppose an indefinite repetition of the hazard; whence it appears that an individual or society of individuals must be guided by other considerations than the mere mathematical value of the expectation in their speculations.

For example: a Society of small resources should not risk £1,000 on a single or small number of speculations for the chance of gaining £10, although the chance might be 100 to 1 in its favour; but the same remark would not apply to the case of risking £10 for the expectation of gaining £1000, even if the chances were 100 to 1 against the occurrence of the event. In both cases, however, the expectation would be purchased at its real mathematical value.

8.—Again, a person whose sole fortune consisted of a lottery-ticket, which has an equal chance of either turning up a prize of £1,000 or a blank, is, mathematically speaking, by the above formula, in an equally advantageous position as he who is in possession of £500; yet no man of ordinary prudence, if offered his choice of the two stakes, would hesitate as to which he ought to prefer. Common sense will prevent a man from risking a large sum, the loss of which would be attended with great privations or inconvenience, even when, mathematically speaking, the chances are considerably in his favour. It is evident, therefore, that two persons whose fortunes are very unequal, cannot engage in play on equal terms, notwithstanding that the chances in favour of each in respect of a single game may be precisely the same. For the one who has the larger fortune can repeat the hazard so often that the probability that his loss will not amount to any given sum will nearly be equal to a certainty, whereas the other, who cannot continue the play in the case of a loss, runs a considerable risk of being ruined. Hence it is obvious that in measuring the value of an expectation, the *number* of cases has to be considered, apart from the abstract theory of probability. Consequently, an individual dealing with contingent events must to a certain extent be guided by considerations of *relative* advantage. In other words, such contingent events will have to him a *moral* expectation value, different from the *mathematical* expectation value.

9.—By way of illustration: *A small Society cannot risk the same sums as a large Society in speculations, unless the former can make a much higher rate of profit than the latter.* Suppose a Society, possessing a capital of £100,000, considers it prudent to risk £10,000 in a certain speculation, then another Company, whose capital is £10,000, should only risk £1,000 in the same. To illustrate this by an extreme case: Suppose one Society can command pounds where another can command only pence; what should the second do to preserve its relation unaltered to the first? It is clear that if it engage in precisely the same kind of transactions, it must risk only one penny where the first risks £1. In this case, both, if either, would only become bankrupt together, and both pay the same percentage of their liabilities; and if both gain, the profit would be the same percentage of their invested capital: the only difference between them, mathematically speaking, would be the name of the coin they deal in. Change the word “pound” into “penny,” and the books of the first Society would become those of the second.

10.—There is, in addition, another circumstance which always is and must be in favour of the larger Society, viz. *the Expenses of Management*; since the outlay in a small Society cannot be proportionably less than the similar outlay in a larger; that is to say, by way of example, a Company with an Income of £20,000 can, in general, be managed for less than double the expense attending another with an income of £10,000.

11.—Moreover, a small Society cannot command the same range of choice as a large one for temporary investment, on account of the smallness of its resources; consequently it must select the best out of a more limited number than the larger Society can command. It is a well-known fact in the commercial world that large businesses can exist with lower profits than smaller ones, inasmuch as the Fluctuation fund must be a larger percentage of the whole in the latter case than in the former. The increase of large farms, large manufactories, etc., confirms this abundantly. A large Society and a small one, trading at the same rate of profits, may, in the words of Mr. de Morgan, be compared to a line-of-battle ship and a small boat in a rough sea: in which case, the first only oscillates, but the second is upset.

Of Moral Expectation.

12.—*Moral* considerations affecting pecuniary contingencies may be accurately measured by formulæ depending on the hypothesis first advanced by the celebrated Bernouilli,* viz. *That the relative value of any infinitely small sum, dx , is inversely proportionate to the Fortune, x , of the individual who expects to receive it, but directly proportionate to its absolute value.*

Then, the moral advantage arising from the contingency of receiving dx would be represented by $k \frac{dx}{x}$, and the relative or *moral value* of the fortune, which is susceptible of contingent augmentation, (its *absolute* value being x ,) becomes

$$= \int k \frac{dx}{x}$$

* [Vol. 5, Petersburg Commentaries.

The theory of *moral* Expectation had its origin in a problem proposed by Nicholas Bernouilli to Montmort, which, on account of its having given rise to considerable discussion in the 'Petersburg Mémoires,' has been usually called the *Petersburg Problem*.]

$$= k \cdot \log x + h \quad . \quad . \quad . \quad (1)$$

k and h being constants to be determined from the nature of the question.

Thus, if $x = F$, the original Fortune, the integration would be taken from $x = F$ to $x = x$, and the above moral value can be put under the form

$$k \cdot \log \frac{x}{F} \quad . \quad . \quad . \quad . \quad (2)$$

13.—To illustrate the application of this formula for moral values, let $f_1, f_2, f_3, \dots$ be sums to be received on the happening of certain contingent events, the probabilities of which are $p_1, p_2, p_3, \dots$ and let it be supposed that one or other of the events will necessarily happen; then

$$p_1 + p_2 + p_3 + \dots = 1 \quad . \quad . \quad . \quad (3)$$

and the *moral* or aggregate relative fortune of the individual, which is, by (1),* represented by

$$k \cdot \log x + h$$

$$\begin{aligned} \text{will also} \quad &= p_1 \{k \cdot \log (F + f_1) + h\} \\ &+ p_2 \{k \cdot \log (F + f_2) + h\} \\ &+ p_3 \{k \cdot \log (F + f_3) + h\} + \text{etc.} \quad . \quad . \quad (4) \end{aligned}$$

$$\text{Hence} \quad x = (F + f_1)^{p_1} \cdot (F + f_2)^{p_2} \cdot (F + f_3)^{p_3} \cdot \text{etc.} \quad . \quad (5)$$

and $x - F$ is the sum, which if it were certain to be received, would procure to the individual the same relative advantage as his contingent expectations.

14.—From eq. (5), we gather that, *even when the mathematical chances are equal*, there is a *moral disadvantage* in speculation.

To illustrate this: Let A , whose fortune is £1,000, make a bet with another, B , on an event, which presents an equal mathematical chance of either gaining,—the loser to pay, say £500, to the winner. What is the *moral* value of A 's fortune after he has made the bet, and before the result is known?

$$\text{Here} \quad F = \text{£}1,000, \quad f_1 = \text{£}500, \quad f_2 = -\text{£}500,$$

$$\text{and} \quad p_1 = p_2 = \frac{1}{2}$$

$$\begin{aligned} \therefore \quad x &= \{1,000 + 500\}^{\frac{1}{2}} \cdot \{1,000 - 500\}^{\frac{1}{2}} \\ &= 500 \sqrt{3} = \text{£}866 \text{ nearly,} \end{aligned}$$

consequently, the position of A is worse by £134 than it was before

* [Laplace calls x the *fortune physique*, and $k \cdot \log x + h$ the *fortune morale*. See his *Théorie Analytique des Probabilités*, chap. 10, art. 41, p. 432.]

he made the bet: therefore, the moral disadvantage is equivalent to this sum, though the terms of the play, according to the mathematical theory, are equal.

If the bet be smaller in proportion to the fortune, say £100, then the moral value of A 's £1,000, after having made an even bet involving a gain or loss of £100, is

$$\begin{aligned} &= \{1,100 \times 900\}^{\frac{1}{2}} \\ &= 300 \sqrt{11} = \text{£}995 \text{ nearly,} \end{aligned}$$

which shows, in this case, a moral disadvantage of only £5, very much less than a fifth of that in the previous example, scarcely $\frac{1}{26}$ th.

15.—As another illustration, take the case of two persons, A and B , whose fortunes are the same, £1,000 each, making a bet that £500 should be paid by A if he loses, and £50 to A if B loses, the odds being supposed and taken in the ratio of the bets, *i.e.* 10 to 1; then the moral value of A 's and B 's fortunes after the bet is made, but before the result is known, would be:—

For A 's case,

$$\begin{aligned} \text{(where } p_1 &= \frac{10}{11} \quad F = 1,000 \quad f_1 = 50 \quad f_2 = -500) \\ x &= (F + f_1)^{p_1} \cdot (F + f_2)^{1-p_1} \\ &= (1,050)^{\frac{10}{11}} \cdot (500)^{\frac{1}{11}} = \text{£}981. \end{aligned}$$

For B 's case,

$$x = (1,500)^{\frac{1}{11}} \cdot (950)^{\frac{10}{11}} = \text{£}990,$$

which shows that although, according to Art. 5, the mathematical expectations are equal when the stakes are in exact proportion to the chances, yet the *moral* expectations are no longer equal, when the bet is made and the result unknown.

16.—Conversely, if the problem in (14) be to find the value, p_1 , of the *mathematical* chance, such that the *moral* value of A 's fortune may remain nearly intact, or only affected to a trifling extent, say μ per pound, by his having made a bet. Then

$$\begin{aligned} (F + f_1)^{p_1} \cdot (F - f_2)^{1-p_1} &= F(1 - \mu) \\ \therefore \frac{(F + f_1)^{p_1}}{(F - f_2)^{p_1}} \cdot (F - f_2) &= F(1 - \mu) \\ p_1 \{\log (F + f_1) - \log (F - f_2)\} &= \log (1 - \mu) + \log F - \log (F - f_2) \\ \therefore p_1 &= \frac{\log (1 - \mu) + \log F - \log (F - f_2)}{\log (F + f_1) - \log (F - f_2)} \quad (6) \end{aligned}$$

Example: Let the fortune be £1,000, the sum risked £500, on

the chance of making a gain of £500 ; to find p_1 , so that the *moral* value may differ from the mathematical by 1 per cent.

$$\text{Here } p_1 = \frac{\log 1.98}{\log 3} = .622$$

or the chances should be about 6 to 4 or 3 to 2 in his favour.

17.—*All risks, if only mathematically balanced, are disadvantageous.*—In order to prove this principle, suppose an individual, whose fortune is F , stakes a sum, R , with a chance, p , of winning. The stake to be won, by the hypothesis, is

$$\therefore = \frac{R(1-p)}{p} \quad (\text{See Art. 5.})$$

and the value of the expectation by eq. (5) is

$$= (F + \frac{R(1-p)}{p})^p \cdot (F-R)^{1-p} \quad . \quad . \quad . \quad (7)$$

If this be less than F , the bet has produced a moral disadvantage, and his pecuniary condition is worse than it was before he entered upon the speculation. Now the above result divided by F

$$= \frac{\{F \cdot p + R(1-p)\}^p \cdot \{p \cdot (F-R)\}^{1-p}}{F \cdot p}$$

Putting this into logarithms, we have it

$$= p \cdot \log \{F \cdot p + R(1-p)\} + (1-p) \cdot \log \{p \cdot (F-R)\} - \log p \cdot F$$

$$= (1-p) p \int_0^R \left\{ \frac{1}{p \cdot F + R(1-p)} - \frac{1}{p(F-R)} \right\} dR.$$

in which the coefficient of dR is evidently negative for all positive values of R , the integral is therefore negative, whence the Expectation itself is negative.

18.—To determine what should be the contingent gain, G , that a person with a fortune, F , may without moral disadvantage, risk a sum, R , on a speculation of which the chance of gain is p ; in other words, what proportion G should bear to R .

$$\text{Here } (F+G)^p \cdot (F-R)^{1-p} = F$$

$$\text{or } G = \{F^{\frac{1}{p}} \div (F-R)^{\frac{1-p}{p}}\} - F \quad . \quad . \quad . \quad (8)$$

$$19.—\text{Let } p = \frac{1}{2}, \text{ and put } R = \frac{F}{m},$$

$$\therefore G = \frac{F \cdot R}{F-R}$$

or in another form $\frac{1}{R} - \frac{1}{G} = \frac{1}{F} \cdot \cdot \cdot \cdot \cdot \cdot (9)$

Again, $G = \frac{m}{m-1} \cdot R \cdot \cdot \cdot \cdot \cdot \cdot (10)$

20.—If $m = 2$ or $R = \frac{F}{2}$

$$G = 2 R = F$$

whence we learn, *That a person should not stake half his fortune upon an even chance, unless the contingent gain be such as will double his fortune, or give him cent. per cent.*

21.—Let $R = F$, then $G = \infty$, or the sum to be gained by a speculation must be infinitely large to make it worth while to risk the whole of one's fortune upon an even chance.

22.—If, in formula (4), the quantities f_1, f_2, f_3 , etc., be very small in comparison with F , the expression for the moral expectation, $x - F$, becomes very nearly

$$= p_1 f_1 + p_2 f_2 + p_3 f_3 \cdot \cdot \cdot \cdot \cdot \cdot (11)$$

which is the *mathematical expectation*;—that is to say, the *Moral and Mathematical expectations nearly coincide*, when the contingent benefits to be obtained from the speculation are very small in comparison with the fortune in possession before the risk is incurred.

23.—A corresponding result to the above arises when the risks, to which a given Capital is exposed, are so divided that the number of ventures may be large. Hence it is better for an Insurance Society that its funds and capital should be exposed to a number of small* risks, independent of each other, than to take the liability of a limited number of large policies, although the *mathematical* probability of loss be in both cases precisely the same. For example, the mathematical value of the risk on one policy of £10,000 on a life aged 30 is the same as the aggregate mathematical values of ten policies of £1,000 each on lives of the same age; but the moral values of the expectations of the two kinds of risks are different.

As another illustration, take the case of a merchant with a capital of £4,000, besides goods of the value of £8,000, which must be

* [See the formulæ and remarks on the subject of Loan Risks in Building Societies, in note, Div. II., p. 58, of Treatise on the subject.]

transported by sea : supposing $\frac{1}{10}$ th to be the probability that the vessel will be lost in the voyage, what is the *moral expectation* of the merchant,—first in the case of the goods being transported in a single vessel ; and secondly, in the case of one-half being embarked in one vessel, and the other half in another.

I. If the goods be embarked in *one* ship, the merchant's absolute fortune will, in the event of the safe arrival of the ship, become £12,000 : and, in the event of her being lost, £4,000. The probability of the first of these events is $\frac{9}{10}$, and that of the second, $\frac{1}{10}$; consequently, the moral value of his absolute fortune becomes, from formula (5),

$$X = (12,000)^{\frac{9}{10}} \cdot (4,000)^{\frac{1}{10}} = \text{£}10,751 \text{ nearly,}$$

which is £449 less than the mathematical value by the probability ($\frac{9}{10}$) of the gain.

II. In the second case, supposing the merchandise to be embarked in two ships, we have three compound events to consider, viz. :—

1°. Both vessels may arrive in safety, the chance of which is

$$\frac{9}{10} \times \frac{9}{10} = \frac{81}{100}$$

2°. One of the ships may be lost, and the other arrive in safety : this may happen in two ways ;

∴ the chance is $2(\frac{9}{10} \times \frac{1}{10}) = \frac{18}{100}$.

3°. Both ships may be lost ; the chance of which is

$$\frac{1}{10} \times \frac{1}{10} = \frac{1}{100}.$$

If the first of these events take place, the Capital of the merchant will become

$$\text{£}4,000 + \text{£}8,000 = \text{£}12,000.$$

If the second happen, it will be

$$\text{£}4,000 + \text{£}4,000 = \text{£}8,000.$$

And if the third happen, it will be only £4,000.

Hence, substituting these numbers in the same formula,

$$\begin{aligned} X &= (12,000)^{\frac{81}{100}} \times (8,000)^{\frac{18}{100}} \times (4,000)^{\frac{1}{100}} \\ &= \text{£}11,033 \text{ nearly,} \end{aligned}$$

which is £167 only below the mathematical expectation, and £282 in excess of the result on the hypothesis of the merchandise being risked on one ship ; and it may be easily shown in the same way, that the *moral expectation* is increased by an increase in the number of ships among which the risk is divided, and approaches its limit £7,200, which is the value of the mathematical expectation, or

$$\frac{9}{10} \times \text{£}8,000.$$

24.—It may, also, be shown that, whatever may be the risk of ruinous fluctuation to which a Society may be exposed in embarking a certain amount of Capital in each of a certain number of similar speculations, it is halved by employing one-fourth as much Capital in each of four times as many speculations, and so on. Mercantile men are perfectly aware of the general truth of this principle, but they very often imagine that they *halve* the risk by *doubling* the number of ventures; whereas they would have to be four times as many.

25.—*The theory of Moral Expectation enables us to assign the circumstances, in which it is advantageous or otherwise for Societies to grant, and for individuals to pay for policies insuring Property, dependent on particular hazards, such as Invalid Lives, Untried Risks, particular kinds and seasons of voyages, etc. For this, we have three principal questions to consider:—*

a. *What amount of premium, Y, the Insurer can pay to the Society without disadvantage.*

b. *What ratio his fortune should bear to the value of the sum speculated, in order that it may prove advantageous to insure at a given premium.*

c. *What Capital a Society ought to possess in order that it may, with probable advantage to itself and safety to the Insurer, accept a given risk.*

(a.) Let R be the sum which an Insurer has at risk, dependent upon an event, the probability of the favourable happening of which is p , and F his capital independently of R . Then the mathematical value of the Assurer's absolute fortune is

$$(F + R) - (1 - p) R = F + p \cdot R$$

if he insures, paying for the policy its net value, $(1 - p) R$; and the moral value $x = (F + R)^p \cdot F^{1-p}$

if he does not insure.

Consequently, according as

$$F + p \cdot R > \text{ or } < (F + R)^p \cdot F^{1-p}$$

it will be advantageous or otherwise to insure. To examine this, we must take the Logarithm of these expressions. The first

$$= \log (F + p \cdot R) = \int \frac{p \cdot dR}{F + p \cdot R}$$

The second $= p \cdot \log (F + R) + (1 - p) \log F$

$$= \int \frac{p \cdot dR}{F + R}$$

which is less than

$$\int \frac{p \cdot dR}{F + p \cdot R}$$

since p is a proper fraction. Therefore, in general, Assurance is attended with advantage.

26.—In the above, let

$$Y' = (F + p \cdot R) - (F + R)^p \cdot F^{1-p}. \quad (12)$$

This represents the sum the Insurer could afford to pay the Assurance Society in addition to the mathematical value of the risk, without moral disadvantage. Hence, his relative fortune will be increased or diminished by insuring, according as he pays less or more than $\{(1 - p)R + Y'\}$. In practice, the premiums paid, Y , may be considered to fall between the limits of $(1 - p \cdot R + Y')$ and $(1 - p \cdot R)$. Hence, notwithstanding that the Assurer pays more than the mathematical value of the risk, he gains a moral advantage by the transaction.

27.—(b.) The amount of Capital, F , the Insurer should possess, so that it may be morally a matter of indifference to him whether he insures or not at a premium, Y , is the value of F determined from the equation

$$F + R - Y = (F + R)^p \cdot F^{1-p}$$

For example: Let R , the sum at risk on the event, = £10,000, Y = £800, and $p = \frac{1.9}{2.0}$; then we have

$$F + 10,000 - 800 = (F + 10,000)^{\frac{1.9}{2.0}} \cdot F^{\frac{1}{2.0}}$$

$$\text{or} \quad (F + 10,000)^{\frac{1.9}{2.0}} \cdot F^{\frac{1}{2.0}} - F = 9,200$$

from which we find the value of F , by approximation, = £5,043. Therefore, to neglect insuring for a policy of £10,000 would not prove advantageous, unless his other capital amounts to more than £5,043, even though the premium charged exceeds the mathematical value of the risk by £300.

28.—(c.) The Capital, F' , the Society granting the policy ought to possess, may be found in the same way. Its capital, after accepting the risk of the sum R , for the premium Y , becomes $(F' + Y)$ should the vessel arrive in safety, and

$$(F' - R + Y)$$

in the event of her being lost; therefore the moral expectation becomes

$$x = (F' + Y)^p \cdot (F' - R + Y)^{1-p}$$

which must = the Society's original Capital, F' , in order that neither advantage nor disadvantage may accrue in undertaking the risk. Therefore, supposing the numerical values of R , Y , p , and $1 - p$ to remain as before, the equation becomes

$$F' = (F' + 800)^{\frac{19}{20}} \times (F' - 9,200)^{\frac{1}{20}}$$

from which we find, by approximation,

$$F' = 14,243 \text{ nearly ;}$$

or there would be a moral disadvantage in a Society undertaking the risk of insuring a cargo with £10,000 for a premium of £800, unless its Capital amounts to £14,243, and should a less premium be demanded, the Capital should be still greater.

If $Y = £600$, which still exceeds the mathematical value of the risk, F' becomes £29,878.

29.—From the preceding we learn that a Company, with a large capital, may not only with safety engage in speculations, which might prove ruinous to another whose resources are more limited, but also with certainty derive a profit from them at a lower premium.

The smaller Company would consequently require a larger margin on its premiums than the richer Company, to guard against contingencies of loss in its speculations, setting aside all question of the expenses and fixed profit on capital required, these being usually included and provided for in the margin added to the premiums.*

30.—It follows that *an Office, that has but few cases of any particular kind of risk, must charge a larger margin over the theoretical premium than where it has a sufficient average ; otherwise, the moral value of its assets is less, after a Policy is granted and risk commenced, than before.* Also, that *an Office of small resources should not attempt risks of an unfavourable character, such as diseased lives, etc.*

31.—*If a Society enter into a given number of successive or simultaneously independent transactions of a contingent character, the combination, which, of all others, is most likely to happen, is that in which the number of losses is to the number of gains most nearly as the probability of losing any one to the probability of gaining it.*

* [See Laplace and *Traité Élémentaire de Lacroix*, p. 132.]

Suppose there are g ways of gaining and l ways of losing, and that the number of speculations in question is n , depending on n events of the same sort. In the developement of

$$(g + l)^n = g^n + ng^{n-1}l + \frac{n(n-1)}{1 \cdot 2} g^{n-2}l^2 + \dots$$

we see, in the coefficients, the number of ways in which *all*, *all but one*, etc., may succeed; and if we divide both sides by the whole possible number of cases, $(g + l)^n$, and let $\frac{g}{g + l} = p$, $\frac{l}{g + l} = q$, we have

$$p^n + n \cdot p^{n-1} q + \frac{n(n-1)}{1 \cdot 2} p^{n-2} q^2 + \dots = 1$$

the terms of which express the probabilities that *all*, *all but one*, etc., will succeed. The ratios of these successive terms to those which precede are

$$n \cdot \frac{q}{p}, \quad \frac{n-1}{2} \cdot \frac{q}{p}, \quad \frac{n-2}{3} \cdot \frac{q}{p}, \text{ etc.}$$

The $\frac{r+1\text{th term}}{r\text{th term}} = \frac{n-r+1}{r} \cdot \frac{q}{p} = T_r$ (say).

Let the r th term be the *greatest*; that is, let T_r be *less* than unity, and T_{r-1} *greater* than unity, or

$$\begin{array}{l|l} (n-r+1)q < rp & (n-r+1)q > (r-1)p \\ \hline \therefore (n+1)q < r & \therefore (n+1)q > (r-1) \end{array}$$

But the r th term expresses the probability of losing $(r-1)$ and gaining $(n-r+1)$ of the speculations; consequently, in n separate events, against each of which the probability is q , the most probable of all losses is the whole number next below $(n+1)q$, which is *more likely* than any other *given* loss, though not more likely than any out of the other losses.

The preceding relations give

$$\frac{r-1}{n-r+1} > \frac{nq-p}{(n+1)p} < \frac{(n+1)q}{np-q}$$

Where n is a large number, the two fractions just found are very near to $\frac{q}{p}$, which establishes the theorem.

32.—Although the *most likely* combination in question is not to be necessarily counted upon, yet the greater the number of speculations entered into, the smaller will be the percentage of fluctuations to be reasonably looked for. Consequently, if a Society enter into 1,000 speculations, against each of which the chance is 9 : 1, then

it may anticipate the loss of 900 and the gain of 100, and the speculations must not be entered into unless upon terms that will make the 100 pay the risk of the whole 1,000: or, if each successful speculation would bring £10, the sum risked by the Society must be less than the probability of gain, £1, in each of the 1000, in order to allow for the possible deviation from the *most likely* combination.

33.—The following principles are also important, not only in considering questions similar to the preceding, but in the measurement of the probability of events happening in a particular manner among the lives assured in a Company, where the probabilities depend on the experience it has had during previous periods, such as the nature of diseases attending certain occupations and certain districts, or the mortality among invalid lives in successive quinquennial periods.

1°. *The Probability, p , that a particular kind of event which has occurred n times already, will occur again is*

$$= \frac{n+1}{n+2} \quad . \quad . \quad . \quad . \quad (13)$$

When n is very large, $p = 1$; that is to say, after a very large number of observations the probability of the event occurring as before approaches certainty.

Example :—

Thus, if an event, depending on unknown causes, and which can happen only in one of two ways, has been observed to happen once, the probability is two-thirds, or the odds are two to one in favour of its happening in the same way at the next occurrence.

2°. *The probability that the event will occur n' times the same way again is*

$$\frac{n+1}{n+n'+1} \quad . \quad . \quad . \quad . \quad (14)$$

Example :—

Thus, if there are five events, which must turn out in one of two ways, and the first two events have occurred in one way, it is three to one that the next will occur in like manner, and an even probability that all will occur the same. If, however, three events have occurred one way, then the chances are two to one that the remaining two will do so likewise.

3°. *The Probability that there exists a cause which necessitates the*

reproduction of an event that has been observed several times together, increases more rapidly than the probability of the next happening of the event.

For the probability that the event has not been produced by accident, but that it has been facilitated by causes, is

$$= \frac{2^{n+1} - 1}{2^{n+1}}.$$

which increases more rapidly with n than (13).

For further details on these points, see Cournot 'Exposition de la Théorie des Chances et des Probabilités,' and Quetelet's 'Probabilities.'

APPENDIX

ON THE

VALUATION OF POST OBITS

AND

CONTINGENT REVERSIONS OR LEGACIES.

With some simple new Formulæ and Tables.

By Life Annuities.

Art. 1.—Frequent complaints are made of the excessive amounts that are charged by way of *Post Obits* on property, in consideration of the payment of a sum in present money or of Life Annuities granted to the lives entitled to the property in Reversion. These complaints are particularly frequent (and generally with justice) when the parties concerned are private individuals, not conversant with the principles of calculation involved, or when erroneous formulæ are used by Actuaries who have no experience in dealing with such questions. We have consequently thought that the annexed Tables might be useful in enabling Solicitors and others to ascertain the fair amount for a Post Obit, or charge to be made on *Contingent Reversionary Legacies* or property, in the most general case of two lives, where a present annuity is *proposed* to be granted to *one life*, in consideration of a *Post Obit*, contingent on its surviving another, and provision is made for the annual cost of an Assurance in case of previous death. Where more than two lives are involved, the Tables would be too extensive for convenient publication.

2.—The subject has become more especially interesting of late,

*

through the recent actions of *T. v. the H. and P. of W. Assurance Societies* in the Court of Queen's Bench, where the Plaintiff claimed on an Assurance connected with a Post Obit Bond; and the following explanation of the cases may be serviceable.

3.—The Post Obit Bond in question was given for £14,000, to be paid by a life aged 35, in the event of his surviving another aged 74, in consideration of receiving, during the joint existence of the two lives, an annuity of £330 a year. The Plaintiff, having submitted a case to an Actuary, effected, it is said, assurances for £14,000 on the younger life, at an annual premium of from £4. 15s. to £5 per cent., costing him therefore, in the aggregate, nearly £700 a year.

4.—Various pleas were raised by the Companies resisting payment, one of which was, that the sum assured exceeded greatly the *legal assurable* interest which the Plaintiff had in the life. This one plea is supported by an examination of the case, submitted to the Actuary referred to, which was as follows:—

“*What amount should a Post Obit be for, to be paid by a gentleman aged 35, if he outlives his father, aged 74?*”

“*The consideration to be an annual payment of £330, together with the necessary insurance on the younger life, which can be done at 5 per cent., he not being a very good one; the old life to be calculated to live ten years.*”

5.—The Actuary's opinion was as follows:—

“*Assuming that the older life will live ten years, and that the younger will survive the elder, I am of opinion that the amount of the Post Obit, to cover the necessary insurance, should not be less than £12,832.*”

6.—The above answer being assumed as correct, the Plaintiff would not have been far out in effecting his Assurances for £14,000, and in requiring a Post Obit for that amount.

But, in the preceding case, two arbitrary suppositions were laid down as conditions of the question:—

1st. *That the older life would live ten years certain.*

2nd. *That the younger life would certainly survive him;*

and such assumptions are constantly being made, to the injury of property mortgaged for Post Obits.

7.—On these assumptions the calculations would stand thus (treating the Annuities, for simplicity, as Annuities *due*, and interest at five per cent.) :—

Let A = Accumulation of an Annuity of £1, paid at the beginning of the year, for ten years certain, at 5 per cent. interest ;

a = Annuity paid = £330 ;

O = Post Obit :

then O . (.05) = Annual premium paid by Assurer :

$$\therefore \{ 330 + O \cdot (.05) \} \cdot A = O$$

$$\begin{aligned} \therefore O &= \frac{A \times 330}{1 - A \cdot (.05)} \quad \quad \quad (1)^* \\ &= \frac{13.207 \times 330}{1 - (13.207 \times .05)} \\ &= £12,832 \text{ nearly.} \end{aligned}$$

The preceding assumptions, however, are erroneous, as, by the Carlisle Law of Mortality, the joint existence of two lives, aged 35 and 74, is only worth, at five per cent., 5.881, or less than six years' purchase.

8.—The case would have been correctly stated thus :—

“ What amount should a Post Obit be for, to be paid by a gentleman, aged 35, if he survive his father, aged 74 ?

“ The consideration to be an annual payment of £330, together with the necessary Insurance on the younger life, the premium for which may be taken at £5 per cent. per annum.”

9.—The correct amount would then be obtainable thus by the ordinary mode of calculation :—

Let a = Annuity due, or payable in advance each year to x, during the joint existence of two lives, aged x, y, for a Post Obit O, to be received if x survive y ;

A = Accumulated amount, with interest (by the end of the year when one has died), of £1 a year, payable in advance during the joint existence of x, y,

* [See Table 9, page 305, *Treatise on Industrial Investment and Emigration*, (taking amount for eleven years, minus £1).]

Hence if $\mathcal{E}a$ be the actual Annuity desired to be bought: Then
the Post Obit, $O = \frac{a}{\pi_{x \cdot y} - p_{x \cdot y}^{(1)}}$ (3)

which is identical with (2), since

$$A = \frac{1}{\pi_{x \cdot y}}.$$

13.—Whence this *Rule* :—

To Calculate the Amount of a Post Obit Bond.

“FROM *the net annual premium,—or sinking fund, at five per cent. Carlisle (or such other rate of interest as may be allowed, and Law of Mortality selected), for the Assurance of £1, payable at the death of the first of two lives,—SUBTRACT the Office annual premium for £1 Assurance against the younger life dying before the older,—And divide the proposed Annuity to the younger, by the difference.*” (See the Tables at page 7.)

14.—The rate of interest that should be involved in $\pi_{x \cdot y}$ varies in practice from 5 to 7 per cent., and $\pi_{x \cdot y}$ is easily calculated, with the aid of Joint Life Annuity Tables, from the formula given in our *Treatise on Copyhold Enfranchisement and Freehold Land Societies* (3rd ed., page 4, App.), viz.—

$$\pi_{x \cdot y} = \frac{1}{a_{x \cdot y}} - \frac{1}{a_\infty} \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$

where $a_{x \cdot y}$ is the present value of an *Annuity due* on two lives, and a_{∞} the present value of a perpetuity *due* $= \frac{1}{d}$.

15.—The preceding assumes that the Annuity is payable at the *beginning** of the year, for which, if desired, the equivalent value of the Annuity, payable *half-yearly* or quarterly, can be substituted; but this should *not* be done, unless interest on the Post Obit is

* [It is worthy of attention that, if formulæ relating to Life Contingencies are made to depend, when practicable, on but *one unknown* quantity, and to involve symbols for *annuities due* or payable at the *beginning*, instead of at the *end* of each year, their forms are not only more elegant, but more simple for practical use and remembrance. Such forms are also preferable, as they are then analogous to formulæ for *premiums*, which are customarily payable at the *beginning* of the year; and they can be as easily adapted to cases of *half-yearly* or *quarterly* Annuities, as formulæ involving Annuities due at the *end* of the

Art. 17.

TABLE for calculating the Annuity to be granted in purchase of a Post-Obit Bond or Contingent Reversionary Legacy of £100, payable on the contingency of one life (*A*) surviving another (*B*).

(The Annuity is the difference between Columns 1 and 2.)

Ages.		Column 1. Gross Annual Payment to purchase a Post Obit or Contingent Reversionary Legacy of £100, receivable if <i>A</i> survive <i>B</i> , inclusive of cost of insuring the chance of <i>A</i> dying before <i>B</i> , allowing interest at			Column 2. Deduction to be made for rate of insurance of £100, payable should <i>A</i> die before <i>B</i> .
A.	B.	5 per cent.	6 per cent.	7 per cent.	Office.
20	20	£. s. d. 2 0 8	£. s. d. 1 18 3	£. s. d. 1 16 3	£. s. d. 1 8 7
	25	2 3 8	2 1 2	1 19 2	1 7 8
	30	2 7 6	2 5 0	2 2 10	1 6 9
	35	2 11 10	2 9 0	2 6 7	1 5 10
	40	2 17 11	2 14 10	2 12 2	1 4 11
	45	3 4 8	3 1 1	2 18 0	1 4 1
	50	3 15 5	3 11 5	3 7 10	1 3 2
	55	4 13 1	4 9 0	4 5 4	1 2 4
	60	5 17 9	5 13 6	5 9 8	1 1 6
	65	7 4 0	6 19 5	6 15 2	1 0 8
	70	9 8 0	9 3 3	8 19 0	0 19 9
	75	12 9 7	12 4 6	11 19 9	0 19 0
	80	15 13 9	15 8 5	15 3 5	0 18 3
	85	20 13 5	20 8 2	20 3 4	
25	25	2 6 7	2 4 1	2 1 11	1 12 4
	30	2 10 4	2 7 8	2 5 5	1 11 2
	35	2 14 5	2 11 7	2 9 1	1 10 0
	40	3 0 4	2 17 3	2 14 7	1 8 10
	45	3 6 11	3 3 6	3 0 5	1 7 8
	50	3 17 6	3 13 7	3 10 1	1 6 8
	55	4 15 2	4 11 1	4 7 5	1 5 8
	60	5 19 10	5 15 6	5 11 7	1 4 9
	65	7 5 10	7 1 3	6 17 1	1 3 10
	70	9 9 9	9 5 0	9 0 8	1 2 9
	75	12 10 11	12 6 2	12 1 11	1 1 9
	80	15 15 1	15 9 11	15 5 1	1 0 10
	85	20 14 10	20 9 6	20 4 8	

Annuity for the Purchase of a Post-Obit Bond—continued.

Ages.		Column 1.									Column 2.		
		Gross Annual Payment to purchase a Post Obit or Contingent Reversionary Legacy of £100, receivable if <i>A</i> survive <i>B</i> , inclusive of cost of insuring the chance of <i>A</i> dying before <i>B</i> , allowing interest at									Deduction to be made for rate of insurance of £100, payable should <i>A</i> die before <i>B</i> .		
A.	B.	5 per cent.			6 per cent.			7 per cent.			Office.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
30	30	2	13	10	2	11	1	2	8	10	1	16	9
	35	2	17	8	2	14	10	2	12	5	1	15	3
	40	3	3	5	3	0	4	2	17	9	1	13	10
	45	3	9	9	3	6	4	3	3	3	1	12	4
	50	4	0	0	3	16	4	3	12	10	1	10	11
	55	4	17	8	4	13	9	4	10	1	1	9	8
	60	6	2	3	5	18	1	5	14	5	1	8	7
	65	7	8	4	7	3	10	6	19	9	1	7	7
	70	9	12	5	9	7	8	9	3	4	1	6	8
	75	12	13	6	12	8	11	12	4	8	1	5	8
	80	15	17	9	15	12	7	15	7	11	1	4	9
	85	20	17	7	20	12	3	20	7	5			
35	35	3	1	3	2	18	3	2	15	8	2	1	5
	40	3	6	7	3	3	6	3	0	9	1	19	6
	45	3	12	8	3	9	2	3	6	0	1	17	7
	50	4	2	9	3	18	10	3	15	5	1	15	8
	55	5	0	0	4	16	0	4	12	5	1	13	9
	60	6	4	5	6	0	4	5	16	7	1	12	3
	65	7	10	4	7	5	10	7	1	9	1	11	0
	70	9	14	2	9	9	5	9	5	0	1	9	9
	75	12	15	3	12	10	7	12	6	3	1	8	7
	80	15	19	2	15	14	1	15	9	4	1	7	4
	85	20	18	11	20	13	6	20	8	7			
40	40	3	11	8	3	8	5	3	5	6	2	7	9
	45	3	17	3	3	13	8	3	10	6	2	5	4
	50	4	6	10	4	2	11	3	19	5	2	2	9
	55	5	3	11	4	19	10	4	16	2	2	0	3
	60	6	7	11	6	3	11	6	0	3	1	18	0
	65	7	13	9	7	9	2	7	5	1	1	16	3
	70	9	17	6	9	12	10	9	8	6	1	14	9
	75	12	18	9	12	14	0	12	9	9	1	13	6
	80	16	2	10	15	17	8	15	12	10	1	12	8
	85	21	2	6	20	17	2	20	12	3			

Annuity for the Purchase of a Post-Obit Bond—continued.

Ages.		Column 1. Gross Annual Payment to purchase a Post Obit or Contingent Reversionary Legacy of £100, receivable if <i>A</i> survive <i>B</i> , inclusive of cost of insuring the chance of <i>A</i> dying before <i>B</i> , allowing interest at			Column 2. Deduction to be made for rate of insurance of £100, payable should <i>A</i> <i>die before B</i> .
A.	B.	5 per cent.	6 per cent.	7 per cent.	Office.
45	45	£. s. d. 4 2 1	£. s. d. 3 18 4	£. s. d. 3 14 11	£. s. d. 2 14 4
	50	4 11 0	4 7 0	4 3 5	2 11 0
	55	5 7 5	5 3 2	4 19 4	2 7 6
	60	6 10 10	6 6 8	6 2 10	2 4 1
	65	7 15 11	7 11 3	7 7 1	2 1 0
	70	9 19 2	9 14 5	9 10 0	1 18 3
	75	13 0 0	12 15 4	12 11 0	1 16 0
	80	16 3 10	15 18 8	15 14 0	1 14 5
	85	21 3 9	20 18 4	20 13 3	
50	50	4 19 1	4 14 9	4 10 10	3 4 10
	55	5 14 8	5 10 3	5 6 2	3 0 5
	60	6 17 3	6 12 11	6 8 11	2 15 11
	65	8 1 2	7 16 6	7 12 1	2 11 4
	70	10 3 6	9 18 7	9 14 0	2 6 9
	75	13 3 4	12 18 6	12 14 1	2 2 9
	80	16 6 2	16 0 11	15 16 1	1 19 2
	85	21 5 4	20 19 10	20 14 9	
55	55	6 9 6	6 5 0	6 0 11	4 3 2
	60	7 11 6	7 7 0	7 3 0	3 17 10
	65	8 14 4	8 9 7	8 5 2	3 12 6
	70	10 15 9	10 10 9	10 6 1	3 6 7
	75	13 15 2	13 10 2	13 5 7	3 1 4
	80	16 16 9	16 11 4	16 6 4	2 16 7
	85	21 15 0	21 9 5	21 4 3	
60	60	8 13 0	8 8 7	8 4 7	5 9 2
	65	9 14 10	9 10 1	9 5 10	5 3 0
	70	11 15 8	11 10 8	11 6 1	4 16 6
	75	14 15 0	14 10 1	14 5 7	4 10 7
	80	17 16 3	17 10 10	17 5 10	4 5 7
	85	22 14 8	22 8 11	22 3 7	

Annuity for the Purchase of a Post-Obit Bond—continued.

Ages.		Column 1. Gross Annual Payment to purchase a Post Obit or Contingent Reversionary Legacy of £100, receivable if <i>A</i> survive <i>B</i> , inclusive of cost of insuring the chance of <i>A</i> dying before <i>B</i> , allowing interest at			Column 2. Deduction to be made for rate of insurance of £100, payable should <i>A</i> die before <i>B</i> .
A.	B.	5 per cent.	6 per cent.	7 per cent.	Office.
65	65	£. s. d. 10 14 6	£. s. d. 10 9 6	£. s. d. 10 5 0	£. s. d. 6 14 5
	70	12 13 4	12 8 2	12 3 5	6 5 3
	75	15 11 2	15 6 1	15 1 5	5 16 8
	80	18 10 2	18 4 7	17 19 4	5 8 5
	85	23 7 4	23 1 6	22 16 1	
70	70	14 10 1	14 4 7	13 19 6	8 19 11
	75	17 6 5	17 1 0	16 16 0	8 9 2
	80	20 2 3	19 16 4	19 10 10	7 18 6
	85	24 16 6	24 10 1	24 4 2	
75	75	20 2 11	19 17 6	19 12 6	
	80	22 16 9	22 10 10	22 5 3	
	85	27 9 11	27 3 5	26 17 3	
80	80	25 6 5	25 0 3	24 14 7	
	85	29 15 7	29 8 7	29 1 11	
85	85	33 19 1	33 11 5	33 4 2	

EXAMPLE:—*A* Life 35 should receive an Annuity due of £11. 2s. during his joint existence with another, 75, in consideration of a Post Obit of £100, supposing that the purchaser can Assure the life against 75 for a premium of £1. 8s. 7d. per cent. per annum, and is allowed to charge 6 per cent. interest.

Hence for a Post Obit of £14,000 an Annuity of £1554 should be given. (See case as stated in Article 3.)

As to Purchase by Present Values.

Art. 18.—If, instead of an *Annuity*, a *present* cash sum is to be paid to x , for a Post Obit of £1, or in purchase of a Contingent Reversionary Legacy of £1, dependent on x surviving y , the price should be,—

The present net value of £1 receivable at the death of the *first* of the two lives, less the Office *single* premium for the contingent Assurance of x dying before y ;
 $= (S_{x \cdot y})$ or net *single* premium at the rate of interest proposed to be received by the purchaser
 $- \left(S_{x \cdot y}^{(1)} \right)$ at Office rate.

This result is equivalent to

$\pi_{x \cdot y} \cdot (a_{x \cdot y} \text{ taken at 5, 6, or 7 per cent. interest})$
 $- p_{x \cdot y}^{(1)} \cdot (a_{x \cdot y} \text{ taken at 3 or 4 per cent. interest}),$

the reason being, that the purchaser is entitled to *deduct* from the *Present Value* of the total annual cost of the Post Obit (discounted at the rate of profit he is to make, viz. 5, 6, or 7 per cent.) the *Present Value* of the Office annual premium for the Contingent Assurance (discounted at the Office rate of interest, which would be 3 or 4 per cent.).

19.—Some writers recommend the use of the following formula (which gives a lesser present Value), viz. :—

$$1 - (d + p_{x \cdot y}^{(1)}) \cdot a_{x \cdot y}$$

in which $d = \frac{i}{1+i}$, or annual interest *due* of £1, and is usually taken at 5 per cent. for the advantage of the purchaser, whilst $a_{x \cdot y}$ is taken at a lower rate, that is, 3 per cent. The first two terms, $1 - d \cdot a_{x \cdot y}$, would coincide with $S_{x \cdot y}$ or $\pi_{x \cdot y} \cdot a_{x \cdot y}$ in the preceding article, if one *same* rate of interest were involved in both expressions.

20.—The introduction of two rates of interest in the first two terms of the above, viz. :—

$$1 - (d)_{5 \text{ per cent.}} \cdot (a_{x \cdot y})_{3 \text{ per cent.}}$$

as the value of a Reversion of £1, receivable at the death of the first of two lives (without Assurance), is scarcely equitable; for the Seller is made to allow the Purchaser, instead of d_5 , the supposed 5 per cent. yearly interest *due*, its present value discounted at 3 per cent., which is equivalent to allowing a much higher rate.

21.—A like form,

$$1 - (d)_{5 \text{ per cent.}} \cdot (a_x)_{3 \text{ per cent.}} \quad \dots \quad (1)$$

has also been strongly recommended by some Actuaries as a just and proper present value for a *Reversion of £1 depending on a single life* in place of the usual form

$$(S_x)_{5 \text{ per cent.}} \text{ or } 1 - (d)_{5 \text{ per cent.}} \cdot (a_x)_{5 \text{ per cent.}} \quad \dots \quad (2)$$

which is the expression for the single premium or present value of £1 at death of a life x discounted at 5 per cent.

The first form (1) differs from (2) by

$$(d)_{5 \text{ per cent.}} \cdot \{ (a_x)_{3 \text{ per cent.}} - (a_x)_{5 \text{ per cent.}} \},$$

or the difference between the present values of a Life Annuity $(d)_{5 \text{ per cent.}}$ at 3 and 5 per cent., but it cannot be supported by any satisfactory reasoning, and is objectionable from its giving *negative* results for ages under the zero point, corresponding to

$$1 - (d)_{5 \text{ per cent.}} \cdot (a_x)_{3 \text{ per cent.}} = 0,$$

$$\text{or} \quad (a_x)_{3 \text{ per cent.}} = \frac{1}{(d)_{5 \text{ per cent.}}} = (a_\infty)_{5 \text{ per cent.}}$$

that is, *when the Life Annuity due at 3 per cent. at age x = the value of a perpetuity due at 5 per cent. = 21.*

22.—Our own preference would, perhaps, be in favour of the formula S_x or

$$1 - d \cdot a_x$$

in which a higher rate of interest, such as 6 or 7 per cent., should be used throughout;—as we are prepared to recognize that a 5 per cent. discount by the formula S_x is not sufficiently advantageous to satisfy purchasers; considering they run the risk of locking up their money a long time before the Reversion falls in.

23.—But a much more satisfactory form may be deduced as follows (analogous to that in the preceding Articles on Post Obits), and is worthy of consideration, as it does not yet appear to have been noticed by other writers:—

Let $(\pi_x)_5$ = net annual premium or sinking fund to realize £1 at death of x at 5 per cent.;

then $(\pi_x)_5$ is the immediate Annuity *due* that might be granted to the Reversioner in purchase of a Reversion or Post Obit of £1, receivable at death of x , crediting the purchaser with 5 per cent. for the money he advances each year.

Now if the Reversion is to be bought by a *single* present sum, the *Present Value* of the Annuity $(\pi_x)_5$ should be given, which, by customary rule for purchasing *Life Annuities*,

$$= \frac{(\pi_x)_5}{d_5 + p_x} \quad \dots \quad (3)$$

*where p_x is Office premium to insure £1 at death of x .

24.—From the theoretical value of a Reversion, whatever formula be used, a deduction would have to be made, if Legacy or other duty is payable, or if legal or other expenses are anticipated to arise at the time of coming into the Reversion.

25.—For comparison, we place side by side these three forms and their numerical values at various ages, which we will designate by numbers (1), (2), (3). (See next page.) It will be seen that if a person aged 20 were entitled to a Reversion of £100, and the interest of money were 5 per cent., formula (2) would make its value £19.92, and the newly-suggested formula (3) £18.24; while, by the method now in frequent use, viz. (1), the party would not only have nothing to *receive*, but would actually be called upon to *pay* the Purchaser £8.01; thus making the possession of such Reversion a positive liability or debt. This absurd result, apart from any abstract argument, is conclusive proof that the formula from which it is obtained must be radically defective, and cannot be founded on any correct or equitable principle. The positive values given by this latter method at older ages also present equally strange results, for at age 40 it makes the value of £100 in reversion, at 5 per cent., worth only £13.64; whereas the discounted value of the same is £31.48, or, even at 7 per cent., £22.51.

* [The value of an Annuity due of £1 is a_x , which used to be taken formerly at 5 per cent., and is

$$= \frac{1}{d_5 + (\pi_x)_5} \quad \dots \quad (\text{see note p. 6})$$

The modern writers substitute, in the denominator, p_x , the Office annual premium for $(\pi_x)_5$, the net premium at 5 per cent.

It may be mentioned incidentally that the ages at which the present Value $\left(S_x \text{ or } \frac{\pi_x}{d + \pi_x}\right)$ of a Reversion of £1 is $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, or $\frac{1}{f}$, correspond to the ages at

which the annual premiums are equal to d , $\frac{d}{2}$, $\frac{d}{3}$, or $\frac{d}{f-1}$, respectively.

Thus P. V. of a Reversion of £100 is $\frac{100}{3}$, or £33. 6s. 8d. at age where Net annual premium is $\frac{d_5}{2}$ or £2.38 per cent. (See note to p. 5.)

In like manner Practical Estimates can be read off from an Office Table of Annual Life Assurance Premiums.]

COMPARATIVE TABLE of the Values of £1 in Reversion on a Single Life by various formulæ (1), (2), (3).

3 PER CENT. By (2) or S_3 or $1 - d_3 (\alpha_x)_3$ or $\frac{(\pi_x)_3}{d_3 + (\pi_x)_3}$. 5 PER CENT. By (1) or $1 - d_5 (\alpha_x)_5$ or $\frac{(\pi_x)_3 - (d_5 - d_3)}{d_3 + (\pi_x)_3}$. „ „ (2) or S_5 or $\frac{(\pi_x)_5}{d_5 + (\pi_x)_5}$. „ „ (3) $\frac{(\pi_x)_5}{d_5 + p_x}$. New Form recommended. 6 PER CENT. By (2) or S_6 or $\frac{(\pi_x)_6}{d_6 + (\pi_x)_6}$. „ „ (3) $\frac{(\pi_x)_6}{d_6 + p_x}$. New Form recommended. 7 PER CENT. By (2) or S_7 or $\frac{(\pi_x)_7}{d_7 + (\pi_x)_7}$.							
Age.	3 per cent.	5 per cent.			6 per cent.		7 per cent.
	(2) or S_x	(1) $1 - d_5 (\alpha_x)_5$	(2) or S_x	(3) New Form.	(2) or S_x	(3) New Form.	(2) or S_x
20	·3390	—·0801	·1992	·1824	·1603	·1465	·1326
21	·3446		·2035		·1640		·1358
22	·3504		·2082		·1681		·1393
23	·3564		·2131		·1724		·1431
24	·3625		·2182		·1769		·1471
25	·3681		·2237		·1817		·1514
26	·3755		·2292		·1867		·1558
27	·3822		·2350		·1920		·1605
28	·3889		·2409		·1972		·1653
29	·3953		·2463		·2021		·1696
30	·4013	+·0215	·2513	·2289	·2064	·1863	·1733
31	·4073		·2563		·2108		·1771
32	·4136		·2616		·2155		·1812
33	·4201		·2673		·2205		·1856
34	·4269		·2733		·2259		·1905
35	·4340		·2797		·2317		·1956
36	·4412		·2863		·2378		·2011
37	·4487		·2932		·2441		·2068
38	·4562		·3002		·2506		·2128
39	·4639		·3075		·2574		·2189
40	·4716	·1364	·3148	·2833	·2640	·2352	·2251
41	·4789		·3217		·2704		·2308
42	·4862		·3285		·2767		·2365
43	·4935		·3354		·2829		·2421
44	·5011		·3426		·2896		·2481

Age	3 per cent.	5 per cent.			6 per cent.		7 per cent.
	(2) or S_x	(1) $1 - d_5(a_x)_3$	(2) or S_x	(3) New Form.	(2) or S_x	(3) New Form.	(2) or S_x
45	·5089		·3501		·2965		·2544
46	·5169		·3581		·3040		·2613
47	·5254		·3666		·3120		·2687
48	·5344		·3759		·3209		·2770
49	·5441		·3861		·3308		·2864
50	·5543	·2716	·3971	·3520	·3416	·2994	·2968
51	·5651		·4090		·3535		·3083
52	·5760		·4212		·3656		·3202
53	·5870		·4337		·3780		·3324
54	·5981		·4465		·3909		·3451
55	·6095		·4597		·4043		·3584
56	·6210		·4732		·4181		·3723
57	·6326		·4871		·4324		·3867
58	·6441		·5010		·4469		·4012
59	·6551		·5143		·4606		·4151
60	·6653	·4530	·5267	·4601	·4734	·4098	·4280
61	·6744		·5375		·4844		·4392
62	·6833		·5482		·4955		·4503
63	·6922		·5591		·5068		·4617
64	·7016		·5707		·5187		·4739
65	·7111		·5826		·5313		·4866
66	·7210		·5951		·5444		·5001
67	·7312		·6082		·5583		·5145
68	·7417		·6219		·5729		·5297
69	·7525		·6361		·5881		·5456
70	·7634	·6133	·6507	·5603	·6039	·5158	·5623
71	·7746		·6659		·6205		·5800
72	·7852		·6804		·6364		·5969
73	·7948		·6936		·6507		·6122
74	·8033		·7052		·6635		·6259
75	·8103		·7148		·6740		·6370
76	·8172		·7242		·6842		·6479
77	·8235		·7329		·6938		·6581
78	·8300		·7418		·7035		·6685
79	·8371		·7519		·7147		·6805
80	·8437	·7446	·7612	·6479	·7250	·6136	·6917

NOTE.—The following are the Constants occurring in the above formulæ:—

$$d_3 = \cdot 0291.$$

$$d_5 = \cdot 0476.$$

$$d_6 = \cdot 0566.$$

$$d_7 = \cdot 0654.$$

The Variables may be found as follows:—

p_x in Table 1, page 51, for Office Annual Premiums.

(π_x) in the following Table, Art. 26, page 16.

Art. 26.

TABLE of the Value of π_x , the Annual Premium (due), to assure £100 (or Sinking Fund due to accumulate £100) by the end of the year of death of a Person aged x , at 5 per cent. interest, Carlisle Law, Net.

x	π_x			x	π_x		
	£.	s.	d.		£.	s.	d.
20	1	3	9	51	3	5	11
21	1	4	5	52	3	9	5
22	1	5	1	53	3	13	0
23	1	5	10	54	3	16	11
24	1	6	8	55	4	1	1
25	1	7	6	56	4	5	7
26	1	8	4	57	4	10	6
27	1	9	3	58	4	15	9
28	1	10	3	59	5	0	10
29	1	11	2	60	5	6	0
30	1	12	0	61	5	10	8
31	1	12	10	62	5	15	7
32	1	13	9	63	6	1	0
33	1	14	9	64	6	6	9
34	1	15	10	65	6	13	1
35	1	17	0	66	7	0	1
36	1	18	3	67	7	8	1
37	1	19	6	68	7	16	8
38	2	0	11	69	8	6	7
39	2	2	4	70	8	17	8
40	2	3	9	71	9	10	1
41	2	5	2	72	10	2	10
42	2	6	7	73	10	15	7
43	2	8	1	74	11	7	11
44	2	9	8	75	11	18	9
45	2	11	10	76	12	10	1
46	2	13	2	77	13	1	4
47	2	15	2	78	13	13	8
48	2	17	5	79	14	8	8
49	2	19	11	80	15	4	0
50	3	2	9				

NOTE.—[The Equivalents of π_x are—

$$\pi_x = \frac{1}{A_x} = \frac{S_x}{a_x} = \frac{1}{a_x} - \frac{1}{a_\infty} = \frac{S_x}{a_x(1-S_x)} = \frac{1}{a_x} - d.$$

(See Appendix, page 4, 'Treatise on Copyholds.')

Hence π_x at other rates of interest than 5 per cent. can be readily calculated from a Life Annuity, or an S_x Table.]

27.—In note at page 13 we have mentioned that the value of a Life Annuity due of £1 is $\frac{1}{d+p_x}$ where the Policy assured is supposed effected to extent of this value. It sometimes happens, however, that the seller has already a Policy for the whole or part of the amount required in his possession, say for P , taken out n years ago, at a premium of p_{x-n} per pound, which he is prepared to dispose of at the same time. In such case, the saleable value of the Life Interest is increased, since the necessary insurance will cost less a year through the premium on the whole, or part of it, being less. In fact, it is equivalent to his having for sale an additional annuity of

$$P (p_x - p_{x-n}),$$

which gives to the price an additional value of

$$\frac{P (p_x - p_{x-n})}{p_x + d},$$

which is in fact the Value of the Policy, calculated by Office Premiums. (See "Valuation of Policies," in the Appendix on the Investigation of the affairs of a Company, etc.)

Of Contingent Reversionary Life Interests.

28.—In the preceding Articles relating to the sale of a Reversion, it has been supposed to be a sum of money; if, however, it be a *Reversionary Life Interest*, I , of a Life, x , after death of another, y , should x survive, then the usual theoretical value would be

$$I (a_x - a_{x.y}),$$

supposing x to receive the *whole year's annuity I at the end of the year in which y dies. This value, putting a_x (Greek letter *alpha*) for $1 + a_x$, is

$$= I (a_x - a_{x.y}),$$

which may be put under the form of

$$= I \cdot \frac{S_{x.y} - S_x}{d}$$

or

$$= \frac{I}{d + \pi_x} \left\{ S_{x.y} - \pi_{x.y} \right\}.$$

* By the Apportionment Act (4 & 5 Wm. IV. c. 22), this would not be the case in practice, as that statute directs that a life in possession shall receive a proportion of "any rent, annuity, pension, dividend, modus, composition, or other payment," for the period elapsed between the last day of payment and the death, —unless there be (by sect. 3) an express stipulation to the contrary.

29.—If for π_x the Office Premium, p_x , be substituted, and $S_{x.y}$, d , and $a_{x.y}$ be taken at a high rate of interest, varying from 6 to 8 per cent., then the result would be the net Cash Value, R_i , of the reversionary interest, after the deduction made for necessary assurance on the life x for the whole duration thereof, or

$$R_i = \frac{I}{d + p_x} \left\{ S_{x.y} - p_x \cdot a_{x.y} \right\} \quad . \quad . \quad . \quad (1)$$

$a_{x.y}$ is taken at 3 or 4 per cent. if a single premium is to be paid for the assurance.

30.—This result may be deduced by direct reasoning, and its propriety shown, thus:—

Let P = amount of Assurance Policy on life x , required to cover R_i , with accumulations of interest thereon till the end of the year in which occurs the death of the first of the two lives x and y , and also to cover accumulation of annual premium, Pp_x , with interest, until same event.

Now $\frac{R_i}{S_{x.y}}$ = accumulated amount of R_i ,

and $\frac{P \cdot p_x}{\pi_{x.y}}$ = accumulated amount of Pp_x ,

$$\therefore P = \frac{R_i}{S_{x.y}} + \frac{P \cdot p_x}{\pi_{x.y}} \quad . \quad . \quad . \quad . \quad . \quad (2)$$

31.—Now since accumulations are only taken to the end of the year of the first death, and the Policy P is not receivable till x is dead, I must, in case of x surviving y , be sufficient to cover Pd and Pp_x the annual Office Premium still payable till x dies; and, by hypothesis, if x survive, he comes into receipt of one I at the end of the year in which y dies.

$$\therefore I = Pd + Pp_x$$

$$\therefore P = \frac{I}{d + p_x} \quad . \quad . \quad . \quad . \quad . \quad (3)$$

$$\text{and } R_i = \frac{I}{d + p_x} \left\{ S_{x.y} - p_x \cdot a_{x.y} \right\} \quad \text{from (2)}$$

as before.

32.—If a present Life Annuity is to be given to x , payable while x and y are jointly alive, in exchange for his contingent Reversionary Interest, then, as S_x and $a_{x.y}$ may be at the same rate of interest,

$$\text{Present Annuity} = \frac{I}{d + p_x} (\pi_{x.y} - p_x) \quad . \quad . \quad . \quad (4)$$

APPENDIX

ON

INVESTIGATIONS

INTO THE

AFFAIRS OF A COMPANY

FOR

AMALGAMATION OR BONUS DIVISIONS.

SECTION I.

As to Valuations of the Policies and Liabilities of Assurance Societies.

Art. 1.—Let $V_{x,n}$ = Value of a Policy of Assurance of £1 at age x , after n years; supposing net annual premium (π_x) only to be payable.

$V'_{x,n}$ = Value of the same Policy, where Office Premium (p_x) is considered.

Then, at the time when the Policy is effected, if no premiums had to be paid, V_x would coincide with S_x ,* but as there is a contract to pay a premium, p_x ,

$$V'_x = S_x - p_x \cdot a_x.$$

2.—If there were no margin or loading on the premiums, that is, if

then at starting	$p_x = \pi_x$
	$V_x = 0$
since	$S_x = \pi_x \cdot a_x.$

* See definition of S_x at note to page 5.

3.—As in practice, however, the Office charges a higher rate than π_x , viz.

$$p_x = (\mu + 1) \pi_x$$

then $V'_x = -\mu \cdot \pi_x \cdot a_x$ (1)

that is to say, at the beginning the contract is in favour of the Society to the extent of

$$\mu \cdot \pi_x \cdot a_x \text{ or } \mu \cdot S_x$$
 (2)

which is the present value of the margin (or loading for Office expenses and contingencies, and for divisions of profit) added on to the net premium π_x .

It may be mentioned, however, that μ is rarely a constant at all ages.

4.—When n years have elapsed, supposing premium just due,

$$V'_{x,n} = \pm \{S_{x+n} - p_x \cdot a_{x+n}\}$$
 (3)

(which is the form ordinarily used in Valuations), or

$$= \pm (\pi_{x+n} - p_x) a_{x+n}$$
 (4)

5.—Until age $(x + k)$, where

$$\pi_{x+k} = p_x$$

the present value of the contract is still in favour of the Society, or $V'_{x,n}$ is negative.

6.—After n exceeds k , $V'_{x,n}$ becomes positive, and the Policy has a saleable or *Surrender Value* in favour of the Assurer, and that is the sense in which the Value of a Policy is generally understood. It is the excess of the accumulation of the premiums paid, with interest, over the proportion of Losses *estimated* (according to the Law of Mortality assumed) *as likely* to have been experienced each year. Thus, young policies have no surrender value, if the terms of the contract be adhered to.

7.—If, however, it be understood that, from the commencement, a surrender value is to be allowed at any time, the Assurer would have to be credited with this fact, and the formula (4), for surrender purposes, would be changed into

$$(p_{x+n} - p_x) a_{x+n}$$
 (5)

which is always positive, and not an exaggerated surrender value of a Policy, as it is the present value of the difference between the increased premium the Assurer would have to pay at his present age for his policy, and that which he is paying.

8.—A deduction is sometimes made in fixing prices for Surrender, to cover the circumstance that, as a general rule, when lives withdraw from a Society, it is probable they are good, and that the Society, having some invalid ones left, is injured by the self-selection of the Assured.

9.—We give a new form of great simplicity for the valuation of the Policies at an investigation of the affairs of a Society,

$$V'_{x,n} = \pm \{1 - (d + p_x) a_{x+n}\} \quad . \quad . \quad . \quad (6)$$

requiring only a Table of Life Annuities.

This equation shows that on a Policy of £1, all that the Society gains, by the death of the Life not occurring, is an annuity of $(d + p_x)$.

Hence, if the Assurer were to apply a sum of money, such as a Bonus, to make his Policy payable to himself at a future age or in case of previous death, it must be sufficient to provide for the Society a deferred annuity of $(d + p_x)$. (See Art. 39.)

10.—Again,

$$V'_{x,n} = \pm \{1 - (1 + p_x \cdot a_\infty) \cdot (1 - S_{x+n})\} \quad . \quad . \quad . \quad (7)$$

where $a_\infty = \frac{1}{d}$

= value of a perpetuity due of £1.

This form requires only a Table of Reversions (see page 14).

11.—Again,

$$V'_{x,n} = \pm \frac{\pi_{x+n} - p_x}{\pi_{x+n} + d} \quad . \quad . \quad . \quad . \quad (8)$$

depending only on a Table of π_x , or Net Premiums, of which we have given the reciprocals in the Preliminary Remarks.

12.—Where the Valuation of Policies is by net premium, π , instead of *Office*, p , then

$$V_{x,n} = 1 - \frac{a_{x+n}}{a_x} \quad . \quad . \quad . \quad . \quad (9)$$

(depending only on a Table of Annuities Due), or

$$= \frac{S_{x+n} - S_x}{1 - S_x} \quad . \quad . \quad . \quad . \quad (10)$$

in terms of Reversions, S .

13.—The form in equation (8) can be reasoned out thus:—Since,

at end of n years, the Assured has paid up $V_{x,n}$, the interest on this, added to the premium he pays, or

$$V_{x,n} \cdot d + \pi_x$$

must be sufficient to insure the remainder of the Policy $(1 - V_{x,n})$, at present age, or

$$V_{x,n} \cdot d + \pi_x = \pi_{x+n} (1 - V_{x,n}) \quad . \quad . \quad . \quad (11)$$

whence
$$V_{x,n} = \frac{\pi_{x+n} - \pi_x}{\pi_{x+n} + d}$$

as before.

14.—Hence, if the policy be re-valued at end of a further period of k years, we must have

$$V_{x,n+k} = V_{x,n} + V_{x+n} \cdot k (1 - V_{x,n}) \quad . \quad . \quad . \quad (11 \text{ bis})$$

15.—If $V_{x,n}$ be compared with π_x , or the question be, what *number*, $H_{x,n}$, of past *net* premiums upon a sum assured at age x , the Society should have in hand at a Valuation, we have

$$\begin{aligned} H_{x,n} &= \frac{V_{x,n}}{\pi_x} \\ &= \frac{S_{x+n} - S_x}{S_x} \cdot a_\infty \quad . \quad . \quad . \quad (12) \end{aligned}$$

a_∞ being the value of a perpetuity *due*.

$H_{x,n}$ is therefore the *actual amount* for every £1 a year of net premium paid, for which the Assurer is creditor on the Society. See Table in Preliminary Remarks.

16.—In terms of annuities due

$$H_{x,n} = \frac{a_x - a_{x+n}}{1 - d \cdot a_x} \quad . \quad . \quad . \quad . \quad (13)$$

17.—In like manner, at the next Valuation, k years after, there would be $H_{x,n+k}$ in hand, and a comparison with the previous Valuation would show that in the interval there should be an increase of the net premiums in hand

$$H_{x,n+k} - H_{x,n} = \frac{S_{x+n+k} - S_{x+n}}{S_x} \cdot a_\infty \quad . \quad . \quad . \quad (14)$$

This increase *includes* allowance for interest on the last $H_{x,n}$, and on the net premiums paid in the interval, deduction being made for the mortality experienced.

18.—If a Policy has been valued on the principle of *net pre-*

miums, or Tables of such values are at hand, and if μ be known, then $V'_{x,n}$ can be deduced from $V_{x,n}$ as follows:

$$V'_{x,n} = V_{x,n} - \mu (S_{x+n} - V_{x,n}) \quad . \quad . \quad . \quad (15)$$

19.—Simple formulæ for *net* premiums may be * devised in functions of D and N symbols:

$$V_{x,n} = 1 - \frac{N_{x+n}}{D_{x+n}} \cdot \frac{D_x}{N_x} \quad . \quad . \quad . \quad . \quad (16)$$

20.—The preceding formulæ can be adapted for the case of Joint Life and Survivorship Policies by introducing the corresponding Values of S and a .

21.—For Joint Life Policies payable at the death of the first,

$$V'_{x,y,n} = 1 - (d + p_{x,y}) \cdot a_{\overline{x+n}, \overline{y+n}} \quad . \quad . \quad (17)$$

which is probably the most convenient form, as requiring only a table of *Joint Life Annuities*.

22.—If the Policy be one of Survivorship Assurance, payable if a Life, x , die before another, y ,

$$V'_{x,y,n} = \left(\pi_{\overline{x+n}, \overline{y+n}}^{(1)} - p_{x,y}^{(1)} \right) a_{\overline{x+n}, \overline{y+n}} \quad . \quad (18)$$

23.—If tables of $\pi_{x,y}^{(1)}$ be not at hand, $V'_{x,y,n}$ can be deduced from the Office rates for survivorship assurance $p_{x,y}^{(1)}$, if its loading or margin be known or ascertainable, for

$$V'_{x,y,n} = \left(\frac{p_{\overline{x+n}, \overline{y+n}}^{(1)}}{\mu + 1} - p_{x,y}^{(1)} \right) a_{\overline{x+n}, \overline{y+n}} \quad . \quad (19)$$

which only requires a *Joint Life Annuity Table*.

The discussion of the formulæ for other kinds of assurance or endowment would be too long for our space, but the preceding remarks will suggest the necessary forms to be adopted.

*[N_x is the sum of money which will buy at birth, for each of the survivors l_x of l_0 persons then born, a deferred annuity of £1 a year, beginning at age x . This N_x corresponds to David Jones's N_{x-1}

M_x is the sum necessary to provide an assurance of £1 to each person dying after age x .

D_x is the sum at birth necessary to provide an endowment of £1 to the survivors at age x , or it will provide annuities *due* of d (interest) and assurance at death of £1.

$\therefore D_x = M_x + d \cdot N_x.$

24.—*The whole or half of a year's Premium would have to be added in all the preceding formulæ, if the premium had just been paid, or were not due for six months.*

25.—If, on Surrender of a Policy, its full value be allowed in the form of a *free reversionary policy*, $F'_{x,n}$, then

$$F'_{x,n} = 1 - \frac{p_x}{\pi_{x+n}} \quad . \quad . \quad . \quad . \quad . \quad (20)$$

from Article 4.

26.— $F'_{x,n}$ is important, as it measures that portion of a Policy which an Assurer who has survived n years since he effected it, has already paid up or realized, after deducting an allowance for the risk incurred by the Office in the same period.

27.—Each year's payment adds to the amount so paid up on the Policy, until the commencement of the last year of life, when the corresponding value of π_{x+n} would be $\frac{1}{1+i}$ or r ; and, before he pays the last premium,

$$F'_x = 1 - p_x (1+i) \quad . \quad . \quad . \quad . \quad . \quad (\text{from } 20)$$

When it is paid, F'_x becomes £1.

28.—The progress of a Free Policy in k years, in passing from age $x+n$ to $x+n+k$, after enjoyment of assurance for those years is

$$F'_{x, \overline{n+k}} - F'_{x,n} = p_x \left\{ \frac{1}{\pi_{x+n}} - \frac{1}{\pi_{x+n+k}} \right\} \quad . \quad (21)$$

29.—These formulæ suggest how much a Policy should be reduced, if an Assurer desire to omit *altogether* the payment, say, of his $\overline{n+1}^{\text{th}}$ premium, and the risk of the Office be *suspended* for that year. Let $S_{x+n-1|}$ be the premium for an insurance of £1 for one year at age $x+n$. Then the Reduction in Policy should be

$$\begin{aligned} \frac{p_x - S_{x+n-1|}}{\frac{l_{x+n+1}}{l_{x+n}} \cdot r \cdot S_{x+n+1}} &= \frac{p_x - S_{x+n-1|}}{\pi_{x+n} - S_{x+n-1|}} \left(1 - \frac{\pi_{x+n}}{\pi_{x+n+1}} \right) \\ &= \frac{p_x - S_{x+n-1|}}{\pi_{x+n} - S_{x+n-1|}} \cdot (F_{x+n-1}) \quad . \quad . \quad (22) \end{aligned}$$

30.—If the omission take place at an age when π_{x+n} does not differ very much from p_x , the first fraction may be neglected, which would give the

$$\text{Reduction} = F_{x+n.1} \quad (\text{see Art. 25}),$$

which is the amount of a *net* Free Policy corresponding to a new Policy taken out at age $(x+n)$ and dropped at end of one year. In fact, this value would be in favour of the Company as soon as π_{x+n} exceeds p_x and might with safety be used.

In the above,

$$F_{x+n.1} = \left(1 - \frac{\pi_{x+n}}{\pi_{x+n+1}}\right) = \left(1 - \frac{p_{x+n}}{p_{x+n+1}}\right) \quad \dots \quad (23)$$

if the margin on the premiums be constant; so that the value of $F_{x+n.1}$ can be calculated from the Society's office tables.

31.—Even where the Policy is not suspended as in preceding Article, a practical method is nevertheless afforded by formula (22) to provide for cases where Assured is not able to pay a premium. The reduction might be permanent or temporary, or the original amount assured might be reinstated afterwards on payment of the omitted premium, with interest.

32.—Again, since $F_{x,n}$ is Free Policy Assurer gets by past payments for a Life Policy of £1, $1 - F_{x,n}$ is what he loses in amount assured by dropping his Policy.

If he take out a Policy for that amount at present age $x+n$ and dropped it at age $x+n+k$, then

$$(1 - F_{x+n,k}) \cdot (1 - F_{x,n})$$

is what he would lose in amount assured by dropping his new Policy.

This is equal of course to what he would lose in amount assured by dropping a Life Policy of £1, effected at age x , at the end of a term of $(n+k)$ years, or

$$(1 - F_{x,n}) \cdot (1 - F_{x+n,k}) = 1 - F_{x,n+k} \quad \dots \quad (24)$$

33.—This example shows

$$F_{x,n+1} = F_{x,n} + F_{x+n.1} - F_{x+n.1} \cdot F_{x,n}$$

or the progress of a Free Policy in passing from age $(x+n)$ to $(x+n+1)$. The same relation holds of $F'_{x,n}$.

34.—In one or two offices that have been recently established, a privilege is held forth, by way of attraction to the public, that any

Assurer, desirous to discontinue his policy, will be allowed a free Reversionary Policy equal to the amount of the Premiums he has paid. This is unsafe for the Office, until

$$F'_{x,n} = \text{or} > n \cdot p_x$$

or
$$1 - \frac{p_x}{\pi_{x+n}} = \text{or} > n \cdot p_x$$

or
$$p_x^{-1} - \pi_{x+n}^{-1} = \text{or} > n$$

or until the amount, that was assured for £1 a year of the original office premium, exceeds by £ n the number of pounds that £1 a year of net premium would assure at the present age.

When the margin of the Office premium p , over the net π , is known, such that

$$p = (\mu + 1) \pi$$

the safety of the privilege can be tested, on a policy of n years' standing, by seeing whether

$$\frac{(\mu + 1)}{p_{x+n}} - \frac{1}{p_x} = \text{or} < n$$

(See Table of Reciprocals of π_x given in the Preliminary Remarks.)

SECTION II.

As to Divisions of Profit and Allotments of Bonus.

In the Preliminary Remarks, we have briefly pointed out the proper mode of measuring the *Liabilities and Assets of an Assurance Company*, and we will now consider the Allotment of Bonuses.

As to Allotment of Bonus.

35.—Actuaries are not agreed as to the proper principle for apportioning among the Policies the Profit declared in the Balance Sheet as available for division; and various methods are practised, which, although perhaps admitted as objectionable, are continued at subsequent divisions, on account of the almost insuperable difficulty of making any alteration without disturbing the vested rights of the Assurers, many of whom in such Societies anticipate in future Bonuses a compensation for any error in the principles of allotment in the past.

I. At the epoch of a *First Division*, one mode of allotment

adopted is to form a Unit, equal to the sum of the net values, $V_{x,n}$ of the Policies. For subsequent Divisions the Unit being made equal to the progress of the value of the Policy in the period; that is to say, if $n + k$ be the number of years the Policy has been in force, of which k is the number elapsed since the last Division, the Unit would be

$$V_{x, n+k} - V_{x, n}$$

in which the *Amount of the Policy* is taken as including the Bonus declared at previous Divisions.

This plan has the recommendation of crediting the Assurer with the whole amount of the accumulation of the premiums he has paid, with interest, deducting the proportion to defray the losses by death, and the margin for expenses and profits.

Those who advocate this method, make their valuations by net premiums, and argue that the principle adopted in dividing profits should not be different from that which would be fair if the Office were going to wind up or pay off its members.

The argument is that, as the office margin on the net premiums is contributed for expenses and contingencies, any unabsorbed portion of it goes to make profits, and as $V_{x,n}$ is all that the Policy-holder is actually creditor on the Society in respect of his past payments, the surplus should be divided in proportion to $V_{x,n}$.

II. Another plan, which is advertised in the Prospectus of a Scotch Office, is thus stated:—

“The amount of Premiums received under each Policy, with accumulated interest to the time of Valuation, requires to be ascertained, and the difference between these and the values of the corresponding Policies constitutes, of course, the profit arising from each insurance.”

“Then the total available Profit being divided in proportion to these various tabular profits or differences from Policies, the quotients give the share of present profit falling to be allotted to each.”

This process is equivalent to taking as a Unit

$$p_x \cdot A_n - V_{x,n}$$

where A_n = amount by the end of n years of an Annuity due of £1.

In this it is overlooked that no $p_x A_n$ can exist in the Society's hands on any Policy, as each year a portion of the p 's, paid by the members who survive, has been used to pay the Claims of those who have died.

Indeed, $V_{x,n}$ itself would be exactly equal to $\pi_x \cdot A_n$, were it not for the annual losses on the policies; and this method of allotting

Bonus in proportion to the difference is, in fact, to proportion it to the Losses of the Society.

III. Another plan, adopted by many of the leading Offices in England and Scotland, is, *to allot the Surplus funds among the policyholders in the form of a Reversionary Bonus, at an equal rate per cent. per annum on the sums assured*, according to the whole *duration* of the assurances at the time of the allotment, without reference to the ages of the parties.

But the actual present values of such Reversionary Bonuses (which are payable only when death occurs) vary in reality with the ages of the assured, and are proportioned to the values of S for each life at the time of the valuation, *i.e.* to the present value of a Reversion of £1 at their respective ages. Thus an equal Reversionary Bonus of £2 per cent. per annum on policies of 5 years' standing, or £10 in all, is, at 3 per cent. discount, only worth in present money £4 at age 30, whereas it is equivalent to £6. 13s. if the present age be 60.

If G = whole Profit available for Division, the allotment will be correct under this plan if made in proportion to the present values of the risks, so as to give per £1 assured an equal Unit of Reversionary Bonus, b , for every year of standing. The share, B , of each policy, P , would be worth in present value

$$B = n \cdot b \cdot P \cdot S_{x+n}$$

$$\text{where} \quad b = \frac{G}{\sum (n \cdot P \cdot S_{x+n})} \quad \cdot \quad \cdot \quad \cdot \quad (1)$$

IV. Another method in use is to allot the surplus profits on the plan of III., but in *proportion to the number, only, of years' duration* of each Policy *since the last Division*, and to the amount assured, including the previous bonuses.

V. A fifth method of allotment is in *proportion to the amount paid in premiums*, without interest, since the commencement of the Policy; treating each premium, p , or the margin of percentage thereon, as having given rise to the profits.

This plan has the advantage of simplicity of calculation, and consists in apportioning the profits according to the fructification which each premium paid by the Assured has experienced. Thus, a Policy, upon which ten premiums have been paid, would be considered as entitled to ten Units of Bonus on the first year's premium, nine on the second, and so on, down to one on the last, or, in other

words, to fifty-five Units on the Policy. The present value of the share would be

$$B = \frac{n(n+1)}{2} p \cdot b$$

where

$$b = \frac{G}{\sum \left(n \cdot \frac{n+1}{2} \cdot p \right)} \quad \cdot \quad \cdot \quad \cdot \quad (2)$$

This is equivalent to an application of the Bonus in the nature of simple interest on the premiums, and does not seem objectionable on the score of unfairness.

VI. Where the valuation is by Office premiums, and $V_{x,n}$ has not been calculated, another mode is to adopt as a Unit the accumulated amount of the premiums with interest, without deductions for losses; *i.e.*, $p_x \cdot A_n$ at first division, and $p_x (A_{n+k} - A_n)$ at subsequent divisions.

As to the Application of the Bonus.

36.—The share of each Policy in the divisible profits, G , of a Society at the time of a Valuation represents an *immediate* Bonus, B , although, if the assured elect to take this Bonus in cash, a deduction is sometimes made to compensate the Society for the perhaps undesirable withdrawal of the amount from its funds.

The immediate Bonus, B , is convertible, by dividing by S_{x_1} (if the age at the time of the allotment be x_1) into an equivalent fixed *Reversionary Bonus*, payable at death, or, dividing by a_{x_1} or $a_{x_1|n}$, it is applicable to a fixed annual reduction in the premium, either permanently for the whole of life, or until the next epoch for Division of Profits.

If B be converted, as suggested in the Preliminary Remarks, into an *increasing* Reversionary Bonus or an increasing annual Reduction of premiums,—that is to say, one that is greater for each year the assured lives after the date of the division,—then B would have to be divided by* S'_{x_1} in the one case, and by a'_{x_1} in the other, so that the

* [S'_x being single premium for an increasing assurance which is £1 if death occur in the first year, £2 if in second, or £ n if in n th year,

$$\therefore S'_x = \frac{\sum M_x}{D_x};$$

and if π'_x be corresponding annual premium, then

$$\pi'_x = \frac{\sum M_x}{N_x}$$

The uniform payment of π'_x annually is equivalent to an increasing one of

38.—If a Bonus, B_1 , be allowed at age x_1 , and the Assured desire to apply it so that at some future unknown age, $x_1 + y$, the payment of his annual premiums, p_x , may cease, we have

$$B_1 = p_x \cdot \frac{N_{x_1+y}}{D_{x_1}}$$

whence $N_{x_1+y} = \frac{B_1 \cdot D_{x_1}}{p_x} \quad . \quad . \quad . \quad . \quad . \quad (6)$

which gives y by comparing this result with a Table of N . Similarly, the next Bonus will bring the age y earlier.

39.—If the Bonus be applied to make not only the *payment of the premiums cease, but the amount assured itself become payable to the Assurer at age $x + z$ or in case of previous death, B must suffice to meet the deferred Annuity ($d + p_x$), or the annual interest on the amount assured as well as the premium.

$$\therefore B_1 = (d + p_x) \frac{N_{x_1+z_1}}{D_{x_1}}$$

whence $N_{x_1+z_1} = \frac{B_1 D_{x_1}}{d + p_x} \quad . \quad . \quad . \quad . \quad . \quad (7)$

and z_1 can at once be determined by simple inspection of a Table of N (see Article 9).

40.—In like manner, a second Bonus, B_2 , allotted at age x_2 , would be applied to bring the result out at an earlier age, $x_2 + z_2$, than $x_1 + z_1$, and B_2 must be sufficient to buy a temporary deferred Annuity *due* of $d + p_x$, deferred till age $x_2 + z_2$, and lasting till age $(x_1 + z_1 - 1)$ inclusive.

$$\therefore B_2 = (d + p_x) \frac{N_{x_2+z_2} - N_{x_1+z_1}}{D_{x_2}}$$

in which z_2 is the only unknown quantity, since from (7)

$$B_2 = \frac{(d + p_x) N_{x_2+z_2}}{D_{x_2}} - B_1 \cdot \frac{D_{x_1}}{D_{x_2}}$$

$$\therefore N_{x_2+z_2} = \frac{B_2 \cdot D_{x_2} + B_1 \cdot D_{x_1}}{d + p_x} \quad . \quad . \quad . \quad . \quad . \quad (8)$$

whence z_2 .

The reader will notice that $B_1 \cdot \frac{D_{x_1}}{D_{x_2}}$ is the amount of the previous Bonus, improved to the next division, allowing for the probability of the life surviving till that time.

* [The Problem in this article has been investigated in two Papers, published in the Sixth Volume of the 'Assurance Magazine' (pp. 290 and 344); but the writer has used for his purpose an unnecessarily lengthy method.]

41.—Similarly, the third Bonus, B_3 , allotted at age x_3 , would bring out the age of realization, $x_3 + z_3$, of the policy, from

$$N_{x_3+z_3} = \frac{B_3 \cdot D_{x_3} + B_2 \cdot D_{x_2} + B_1 \cdot D_{x_1}}{d + p_x} \quad (9)$$

and so for successive Bonuses. It is to be remarked that these equations are independent of the previous z 's.

42.—If in previous formulæ the Bonuses be assumed of equal amount, B , and annual, commencing at age x of Assurance, and continuing up to the year before the age at which the Policy is receivable, we have

$$\begin{aligned} N_{x+z} &= B \cdot \frac{D_x + D_{x+1} + \dots + D_{x+z-1}}{d + p_x} \\ &= \frac{B}{d + p_x} (N_x - N_{x+z}) \\ &= \frac{B \cdot N_x}{B + (d + p_x)} \quad (10) \end{aligned}$$

43.—By putting π_x for p_x in the preceding equation, we have the age, $x + z$, at which an Assurer can make his Policy payable to himself if he live or in case of previous death, provided he pay in addition to the ordinary net premium, π_x , any given annual margin, B .

44.—Conversely, if $x + z$ be a given age, (10) gives the extent of the margin, B , over π_x , to buy an *Endowment Assurance*, or

$$B = \frac{N_{x+z} (d + \pi_x)}{N_x - N_{x+z}} \quad (11)$$

45.—This last equation agrees with ordinary formulæ for an *Endowment Assurance*, for the total annual payment the Assurer makes is

$$\begin{aligned} (B + \pi_x) &= \frac{N_{x+z}}{N_x - N_{x+z}} (d + \pi_x) + \pi_x \\ &= \frac{N_{x+z} \cdot d + N_x \cdot \pi_x}{N_x - N_{x+z}} \\ &= \frac{N_{x+z} \cdot d + M_x}{N_x - N_{x+z}} \quad (12) \end{aligned}$$

$$\text{or, if preferred,} \quad = \frac{M_x - M_{x+z} + D_{x+z}}{N_x - N_{x+z}} \quad (13)$$

See note to p. 23.

The reader will observe that the M portion of the fraction represents the Death part of the Premium and the D the Endowment part.

SECTION III.

As to Guaranteed Bonuses.

46.—If the plan, adopted by an Assurance Society, be to charge in addition to p_x (the Office Premium for simple assurance *without* profits), such a further margin over the net mathematical rate π_x , as would enable it to *guarantee* a certain Reversionary Bonus payable at death:—Then the proper addition to p_x would be found as follows,—Supposing all expenses and other contingencies of the Society to be provided for by the margin already in p_x over π_x , and by a higher rate of interest being realized than is allowed in the calculation; also, by the lapsing of policies, etc.:—

I. Let the guaranteed Bonus be t per £ of the sum assured, for each year of standing of Policy, so that the Assured shall receive $1 + nt$ at death if it occur in the n th year:—then if χ_x = annual premium for an assurance of £1 and such an increasing Bonus, a *portion = $t \cdot \pi'_x$ is paid as a premium to assure $n \cdot t$ if death occur in n th year, and the remainder

$$\chi_x - t \cdot \pi'_x = p_x$$

$$\therefore \chi_x = p_x + t \cdot \pi'_x. \quad (1)$$

Similarly single $\chi_x = \frac{\mu + 1}{\mu} S_x + t \cdot S'_x \quad (2)$

if $p_x = (\mu + 1) \pi_x$

Example: If $t = .02$, or the Bonus be 2 per cent. per annum of the sum assured (an amount not unfrequently allotted), then

$$\begin{aligned} \chi_x &= p_x + .02 \cdot \pi'_x \\ &= \frac{(\mu + 1) M_x + .02 \Sigma M_x}{N_x} \end{aligned}$$

or

II. Let the guaranteed *Reversionary* Bonus be a return of t per pound of all the annual premiums, ϕ_x , paid after n years (n being equal to the time in which the Assured will have paid in £1 in premiums). The Bonus will thus be $t \cdot \phi_x$ if death occur in the $n + 1$ th year; $2t \cdot \phi_x$ if in the $n + 2$ th year, etc.

Now the margin over p_x , or $(\phi_x - p_x)$, must = the annual premium for a deferred assurance of $t \cdot \phi_x$ at the end of n years, $2 \cdot t \phi_x$ at end of $n + 1$ years, etc.:—

* See note to Art. 36, for a definition of π'_x .

$$\phi_t - p_x = t \cdot \phi_t \cdot \frac{\sum M_{x+n}}{N_x}$$

$$\therefore \phi_t = \frac{p_x}{1 - t \cdot \frac{\sum M_{x+n}}{N_x}} \quad (3)$$

III. If the Bonus in II. commence at once, we must put $n = 0$, and ϕ_t becomes

$$= \frac{p_x}{1 - t \cdot \frac{\sum M_x}{N_x}} \quad (4)$$

or
$$= \frac{p_x}{1 - t \cdot \pi'_x} \quad (5)$$

IV. If the Bonus be a return of all the premiums, $t = 1$,

$$\phi_1 = \frac{p_x}{1 - \pi'_x} \quad (6)$$

47.—If the Guaranteed Bonus be an *increasing Reduction* of Premium, commencing at the end of n years, various modes of calculation may be adopted, according to the extent of the Reduction intended. A simple case is that where the Assurer is to receive, as in Table 16, page 160, an annual increasing reduction equal to the interest at some given rate on all the premiums he has paid, and after the premium is extinguished, an increasing Deferred Annuity. Here we have only to assume that in calculating the premium, say p_x , the Assurer is credited with no interest, so that he may receive it annually during his life:—

$$\therefore p_1 = \left(\frac{M_x}{N_x} \right) (i = 0)$$

$$= \frac{1}{e_x + \frac{1}{2}}$$

where e_x is the expectation of life at age x .

48.—Conversely, if the excess of the Bonus office rate over the *non-profit* rate be a known quantity, say $\mu_1 \cdot \pi_x$, then, in consideration of the Assurer at age x paying $\mu_1 \cdot \pi_x$ a year more than is necessary for a simple assurance of £1, an increasing yearly bonus, commencing at an agreed age, x_1 , might be guaranteed, on the plan suggested in the Preliminary Remarks, which (in the case of the death occurring, say in the n th year after x_1) would be,—

$$= \frac{\mu_1 \pi_x}{\left(\frac{\sum M_{x_1}}{N_x} \right)} \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad (7)$$

since $\frac{\sum M_{x_1}}{N_x}$ is the annual premium for an increasing assurance, effected at age x , but not to commence till age x_1 . This result is

$$= \mu_1 \cdot \frac{M_x}{\sum M_{x_1}} \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad (8)$$

49.—If instead of the increasing rate of annual Bonus, as in the preceding Article, $\mu_1 \pi_x$ had been applied to obtain a fixed Bonus or increase to the Policy, it would have been μ_1 pounds.

SECTION IV.

As to Average Ages, and the Limit of Assurance Risk to be kept by a Society.

50.—The considerations of *Moral and Mathematical Expectation* given in a previous Appendix, show that *it is disadvantageous to an Assurance Society to grant Policies of the same amount to Assurers of different ages, or of different amounts where the ages are the same.*

I. *As to the average age of Policies.*—In valuing Policies, various arrangements are usually made for classifying them according to what are intended to be ‘average’ ages, so as to diminish the labour of calculation. The ‘average age’ of two or more lives is that which would give to the Society the same results, in respect to risk, average duration of live, and the general contingencies of existence, on one Policy for the whole amount assured, as attend the aggregate of the Policies on separate lives. Hence, by way of example, even in the extreme case of only two policies being considered, of different amounts, P_1, P_2 , at ages, say 30 and 60, it would not be correct to say that they are equivalent to one of $P_1 + P_2$ at age 45, nor that the average age is 45, even when $P_1 = P_2$; for the Expectation of a Risk (whichever way it be considered, whether by present value, or with regard to ultimate payment at death, or in respect to the current risk each year) is not the same on a policy at the

mean age for the sum of the two amounts assured, as on the two separate Policies. In other words, the *Average age* will not lie midway between two ages, or be equal to the mean age.

51.—There is no method that can be applied practically which would give an age *truly representing*, even in respect to *Mathematical* expectation, an equivalent for the ages of the lives in the separate Policies. When relative or *Moral* expectation in respect to Policies is considered, the average age of policies on lives of the same age, but for different amounts, is no longer that age:—for instance, suppose three policies, for £100, £200, and £1000, on lives aged 30; the moral expectation attending such Policies is not equal to that of one Policy for £1300 at the same age.

II. *As to Limit of Assurance Risk to be kept by a Society.*—This leads on to the remark that, in order that the *Moral expectation* of the current risks of a Society at the various ages may not be greatly unequal while it is young, or when, from that or other causes, it has not a sufficient number of lives of about the same ages to form an Average, then the *Limit of Assurance kept* at each age should be diminished as the age is greater. Thus if £3,000 be the amount of policy granted on a life aged 30, not more than £1,677 should be granted on a life aged 60, otherwise the Society would experience *Moral* disadvantage; for it is obvious that although, from the Premiums being larger in Policies on advanced ages, the value of the *Mathematical* expectation of the total ultimate payments received by a Company from an assurance on an old life may be equal to that from a corresponding assurance on a younger and consequently longer enduring life, yet the *Moral* expectations of the immediate risks for any current period can only be rendered equal to each other, or nearly so, by a large average of about the same age, or by some system of graduation of the amount assured, so as to tally with the increase of immediate risk attending the fact of the ages being older. There is no means, indeed, of fixing the amounts, so that the proportion of the increase of the *Moral* expectations of the risks attending the policies in the office as they advance in age shall year by year remain the same. This, as the Office gets older or obtains a larger business, is, however, unimportant, the object being to avoid Aberration and consequent loss that may arise from want of an average number of lives of about the same ages. In selecting a decreasing limit of assurance, various ratios will present relative degrees of argument in their favour, but

the one we rather incline to is:—*That the relative amounts assured at various ages should be proportional to the corresponding values of a_x* , which represent the equivalent of the number of premiums the Society is likely to receive on each Policy: always supposing (as may, in general, safely be done) that the premiums themselves are properly calculated to correspond to the ages of the lives assured. This ratio would give a sufficiently accurate adjustment to equalize the *moral* expectation that the lives will last long enough to pay a sufficient *number* of premiums to prevent the Society from losing by them. Thus, as we have said before, if at age 30 the limit of the Society's assurance is fixed at £3,000, at 40 it should be only

$$\frac{3,000 a_{40}}{a_{30}} = £2,648$$

at age 60 it would be

$$\frac{3,000 a_{60}}{a_{30}} = £1,677$$

See the table at p. 7.

52.—Although we recommend this peculiar ratio, our readers can, by the aid of the method in the Appendix on Probabilities (Art. 13), deduce a series of values of the moral expectation, to be used as limits of Assurance at each age, which should correspond to the values of $(1 - p)$, or the chance of dying that each life has, in the period for which the equalization of the moral expectation is desired. For instance, if 5 years were the time, then, at age 30 $(1 - p)$ or the chance of death would be $\frac{153}{3066}$ or $\frac{5}{100}$ nearly, and at age 60 it would be $\frac{327}{1887}$ or $\frac{17}{100}$, and the *mathematical* expectation of the older policy becoming a claim on the Society is as 17 to 5 against the younger policy; but there would still be (according to Art. 14, Appendix on Probabilities) a *moral disadvantage* to the Society in granting these Policies of equal amount, where the risks for the period are so disproportioned, even if the premiums charged were according to these ratios.

To make the calculation with accuracy, it would of course be necessary to take the chance of the death for each of the years of the period, since the policies are payable within three months after death, whenever it may occur.

APPENDIX

ON

THE TRUE LAW OF SICKNESS

IN

FRIENDLY SOCIETIES.

1.—Let, as stated in Art. 101 p. 107, c be the constant minimum rate per annum, at all ages, of Sickness, defined as Inability to Labour, to which human beings are subject, on the average of a large number of lives, and which depends upon their Race, the Climate of their habitations, etc. ;

σ_x , the rate experienced on the average at age x ;
and $E_x = \sigma_x - c$
or the quantity that σ_x exceeds c .

Then, we have found that the True Law of Inability to labour, through Sickness, consists in the relation that, for successive quinquennial periods,

$$E_x = E_{x-5} + E_{x-10} \quad . \quad . \quad . \quad (1)$$

or, in another form,

$$\sigma_x = \sigma_{x-5} + \sigma_{x-10} - c \quad . \quad . \quad . \quad (2)$$

2.—If c be eliminated, we have

$$\sigma_x = 2 \sigma_{x-5} - \sigma_{x-10}$$

or $\sigma_x - \sigma_{x-5} = \sigma_{x-5} - \sigma_{x-10} \quad . \quad . \quad . \quad (3)$

that is to say, the difference between the rate of sickness, at an interval of 5 years, is equal to the previous difference at an interval of 10 years.

3.—From (1) we have by summation of the E 's

$$E_{x+5n} = u_n \cdot E_{x+5} + u_{n-1} E_x$$

in which the coefficients u_n are found by the relation

$$u_{n+1} = u_n + u_{n-1}$$

and are terms of the series,

$$1, 1, 2, 3, 5, 8, 13, 21, \text{ etc.}$$

or, the probable rate of sickness $5n$ years hence may be estimated in terms of two past experiences at an interval of 5 years.

4.—The above can be made

$$E_{x+5n} = u_{n+1} E_x + u_n \cdot E_{x-5} \quad . \quad . \quad . \quad (4)$$

5.—If $E_{x+5} = E_x$ at commencement, such as sickness at 25 = that at 20, nearly, then

$$E_{x+5n} = u_{n+2} E_x \quad . \quad . \quad . \quad . \quad (5)$$

6.—From (3) we can deduce

$$[\sigma_{x+1} + \sigma_{x+2} + \sigma_{x+3} + \sigma_{x+4} + \sigma_{x+5}] = [\sigma_x + \sigma_{x-1} + \sigma_{x-2} + \dots + \sigma_{x-9}] - 5c \dots (6)$$

whence we see that, if we suppose a Society for its protection to take the unfavourable view that all now alive at age x will survive the coming quinquennial period, and expose the Society to loss from Sickness, the maximum amount, it is likely to pay per head on a large average of members, can be expressed in terms of the rates experienced in the last 10 years. The actual result, considering that deaths in the interval may occur, would be probably less.

In another form, putting E for $\sigma - c$ in equation (6),

$$\Sigma (E_{x+1} \text{ to } E_{x+5}) = \Sigma (E_{x-9} \text{ to } E_x) \quad . \quad . \quad . \quad (7)$$

7.—From two quinquennial experiences, E_x and E_{x+5} , the *average* rate of sickness during the next quinquennial period may be deduced with sufficient approximation by supposing it to be the mean between the rates at the beginning and end of the period:—that is to say, if $E_{x+12\frac{1}{2}}$ be the average sickness for the period between $x+10$ and $x+15$, it may be taken,

$$= \frac{E_{x+10} + E_{x+15}}{2}$$

then

$$E_{x+12\frac{1}{2}} = \frac{3}{2} E_{x+5} + E_x \quad . \quad . \quad . \quad (8)$$

It is the purpose of this paper to discuss the

$$x = y = z$$

and the results of the experiment.

$$1. 2. 3. 4. 5. 6. 7. 8. 9. 10.$$

As the results of the experiment are given in Table I, it is seen that the results are in good agreement with the theoretical results.

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APPENDIX ON FRIENDLY SOCIETIES.

THE NEW ACT.

AN ACT TO CONSOLIDATE AND AMEND THE LAW RELATING TO FRIENDLY SOCIETIES, 1855.

18 & 19, VIC. c. 63.

WHEREAS it would conduce to the improvement of the law relating to Friendly Societies if the several statutes relating thereto were consolidated, and certain additions and alterations were made therein: Be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same:

Acts or parts
of Acts set
forth in first
schedule
repealed.

I. That there shall be hereby repealed the several Acts or parts of Acts set forth in the first schedule hereto, save and except as to any Offences committed, or penalties or liabilities incurred, or bond or security given, or proceedings taken under the same, before the commencement of this Act.

Societies un-
der former
acts to con-
tinue.

II. Provided nevertheless, That, notwithstanding the repeal of the said several statutes, every Friendly Society now subsisting, which heretofore had been formed and established under the said Acts or any of them, shall still be deemed to be and shall continue to be a subsisting Society, as fully as if this Act had not been made, unless and until such Society shall be dissolved, or united with some other Society as hereinafter mentioned.

Their rules to
continue in
force, and
enrolments
to be sent to
Registrar.

III. Provided also, that the Rules of every such subsisting society hitherto formed and established which have been hitherto confirmed, registered, or certified under the said Acts or any of them, shall be deemed valid and in force until the same shall be altered, or

rescinded, as herein-after mentioned; and all transcripts of any of such rules, which are now filed with the Rolls of the Sessions of the Peace, of any County, Riding, or Division, City or Borough, Liberty or Place, shall be taken off the file and shall be transmitted, on or before the first day of November, one thousand eight hundred and fifty-five, to the Registrar under this Act, to be by him kept in such manner as shall be directed from time to time by one of her Majesty's Secretaries of State in that behalf.

All their contracts, and all Bonds, &c., to them, to continue in force.

IV. Provided also, That all contracts and engagements by or with any of the said societies now valid and in force, and all bonds and securities heretofore given by any trustee, treasurer, or other officer of any such society, shall continue and be valid and in force notwithstanding the repeal of the said Acts.

Their exemptions, Powers, and Privileges under this Act.

V. All such subsisting societies, whose rules have heretofore been confirmed, registered, or certified under the said Acts or any of them, shall, so long as they shall not hereafter effect an assurance to any member thereof, or other Person, of any sum exceeding two hundred pounds, or of any annuity exceeding thirty pounds per annum, enjoy all the exemptions and privileges by this Act conferred on societies to be established under the provisions of this Act, as fully as if they had been registered and certified under this Act as herein-after mentioned.

Registrars.

How and by whom appointed.

VI. For the purposes of this Act, there shall be three Registrars of Friendly Societies, one for England, one for Scotland, and one for Ireland, who shall hold their respective offices during the pleasure of the Commissioners for the Reduction of the National Debt; and upon the death, resignation, or removal of any one of them, the said Commissioners shall appoint another, being a barrister, in England or Ireland, and in Scotland an advocate, of not less than seven years standing, to the said office.

Their salaries.

VII. It shall be lawful for the Commissioners of her Majesty's Treasury to pay to the present Registrar for England a salary equal to that which has been paid to him

yearly in each of the three last years, not exceeding one thousand pounds per annum, and to pay to any Registrar hereafter to be appointed for England a salary not exceeding eight hundred pounds a year, and to pay to the Registrars for Scotland and Ireland respectively a salary such as the said Commissioners shall direct not exceeding one hundred and fifty pounds a year, every such salary to be paid by four equal quarterly payments; and any of the said Registrars who shall be appointed, or who shall die, resign, or be removed from his office, in the interval between two quarterly days of payment, shall be entitled to a proportionate part of his salary, and such salaries and proportionate parts of salaries shall be paid out of such monies as shall be provided by Parliament for that purpose.

Their Ex-
penses of
office, &c.

VIII. The said Commissioners of her Majesty's Treasury shall, out of such monies as may be provided by Parliament for the purpose, pay to the said Registrars respectively such sum as will defray the expenses allowed by the said Commissioners from time to time for office rent, salaries of clerks, stationery, computation of Tables, and for such other expenses as may be incurred by them respectively.

Societies how
and for what
purpose
formed.

IX. It shall be lawful for any number of persons to form and establish a Friendly Society, under the provisions of this Act, for the purpose of raising by voluntary subscriptions of the members thereof, with or without the aid of donations, a fund for any of the following objects; (that is to say,)

For pay-
ments on
death.

1. For insuring a sum of money to be paid on the birth of a member's child, or on the death of a member, or for the funeral Expenses of the wife or child of a member:

For relief in
sickness, &c.

2. For the relief or maintenance of the members, their husbands, wives, children, brothers or sisters, nephews or nieces, in old age, sickness, or widowhood, or the endowment of members, or nominees of members at any age:

For other
purpose
authorized
by Secretary
of State, &c.

3. For any purpose which shall be authorized by one of her Majesty's Principal Secretaries of State, or in Scotland by the Lord Advocate, as a purpose to which the powers and facilities of this Act ought to be extended:

Provided, that no member shall subscribe or contract for an annuity exceeding thirty pounds per annum, or a sum payable on death, or on any other contingency, exceeding two hundred pounds:

And if such persons so intending to form and establish such society shall transmit rules for the government, guidance, and regulation of the same, to the Registrar aforesaid, and shall obtain his certificate that the same are in conformity with law as herein-after mentioned, then the said society shall be deemed to be fully formed and established from the date of the said certificate.

No money to
be paid on
the death of
a child with-
out a copy of
entry of the
Registrar of
Deaths.

X In any society in which a sum of money may be insured payable on the death of a child under ten years of age, it shall not be lawful to pay any sum for the funeral expenses of such child, except upon production of a copy of the entry in the register of deaths, signed by the Registrar of the district in which the child shall have died; and if such entry shall not state that the cause of death has been certified by a qualified medical practitioner, or by a coroner, a certificate signed by a qualified medical practitioner, stating the probable cause of death, shall be required, and it shall not be lawful in that case to pay any sum without such certificate; and no trustee or officer of any society, upon an insurance of a sum payable for the funeral expenses of any such child, made after the passing of this Act, shall knowingly pay a sum which shall raise the whole amount receivable from one or more than one society for the funeral expenses of a child under the age of five years to a sum exceeding six pounds, or of a child between five and ten years to a sum exceeding ten pounds; and any such trustee or officer who shall make any such payment otherwise than as aforesaid, or who shall pay any sum without endorsing the amount which he shall pay on the back or at the foot of the copy of entry signed by the said registrar, shall be liable to a penalty not exceeding five pounds for

every such offence, upon conviction thereof before two Justices of the County or Borough in which such death shall have taken place: the said registrar shall be entitled to receive, upon delivery of such copy of entry, for the purpose of receiving money from a Friendly Society, a fee of one shilling, and it shall not be lawful for him to deliver more than one such copy for such purpose, except by the order of a Justice of the Peace.

Benevolent
Societies, in
what case
entitled to
the benefits
of this Act.

XI. And whereas many provident, benevolent, and charitable institutions and societies are formed and may be formed for the purpose of relieving the physical wants and necessities of persons in poor circumstances, or for improving the dwellings of the labouring classes, or for granting pensions, or for providing habitations for the members or other persons elected by them, and it is expedient to afford protection to the funds thereof: Be it enacted, That if two copies of the rules of any such institution or society, and from time to time the like copies of any alterations or amendments made in the same, signed by three members and the secretary thereof, shall be transmitted to the registrar aforesaid, such registrar shall, if he shall find that the same are not repugnant to law, give a certificate to that effect; and thereupon the following sections of this Act, that is to say, the seventeenth, eighteenth, nineteenth, twentieth, twenty-first, and twenty-second, fortieth, forty-first, forty-second, and forty-third, shall extend and be applicable to the said institution and society, as fully as if the same were a society established under this Act.

Statutes as
to unlawful
oaths not to
extend to So-
cieties under
this or any re-
pealed Acts.

XII. The act of the thirty-ninth of George the Third, Chapter Seventy-nine, and the Act of the fifty-seventh of George the Third, Chapter Nineteen, and also the Act of the fourteenth and fifteenth of her present Majesty, Chapter Forty-eight, relating to unlawful oaths in Ireland, shall not extend to any society established under this Act or any of the Acts hereby repealed, or to any meeting of the members or officers thereof, in which society or at which meeting no business whatever is transacted other than that which directly and immediately relates to the objects of the society as declared in the rules thereof, and set forth in the certified copy thereof:

Provided that the trustees or other officers of the society, when required under the hands of two of her Majesty's Justices of the Peace, shall give full information to such Justices of the nature, objects, proceedings, and practices of such society, and in default thereof the provisions of the Acts herein recited shall be in force in respect of such society.

Societies,
how dis-
solved.

XIII. It shall be lawful for the members of any society heretofore formed and established, or hereafter to be formed and established at some meeting thereof to be specially called in that behalf, to dissolve or determine the same by consent: Provided that no society established under this or any Act, relating to Friendly Societies shall be dissolved or determined without obtaining the votes of consent of five-sixths in value of the then existing members thereof, including the honorary members, if any, to be ascertained in manner herein-after mentioned, nor without the consent of all persons, if any, then receiving or then entitled to receive any relief, annuity, or other benefit from the funds thereof, to be testified under their hands individually and respectively, unless the claim of every such person be first duly satisfied, or adequate provision made for satisfying such claim; and for the purpose of ascertaining the votes of such five-sixths in value of the numbers as aforesaid, every member shall be entitled to one vote, and an additional vote for every five years that he may have been a member, but no one member shall have more than five votes in the whole; and the intended appropriation or division of the funds or other property shall be fairly and distinctly stated in the agreement for dissolution prior to such consent being given; and the agreement for such dissolution, duly signed as aforesaid, accompanied with a statutory declaration by one of the trustees, or by three members and the secretary, taken before a Justice of the Peace, that the provisions of this Act have been complied with, shall be forthwith transmitted to the Registrar, to be by him deposited with the rules of the society, and such agreement shall thereupon be an effectual discharge at law and in equity to the trustees, treasurers, and other officers of such society, and shall operate as a release from all the members of the society to such trustees, treasurers, and other officers; and it shall not be lawful in any society

to direct a division or appropriation of any part of the stock thereof, except for the purpose of carrying into effect the general interests and objects declared in the rules as originally certified, unless the claim of every member is first duly satisfied, or adequate provision be made for satisfying such claims; and in case any member of such society shall be dissatisfied with such provision, it shall be lawful for him or her to apply to the Judge of the County Court of the district within which the usual place of business of the society is situated for relief or other order; and the said Judge shall have the same powers to entertain such application, and to make such order or direction in relation thereto, as he may think the justice of the case may require, as hereinafter is enacted in regard to the settlement of disputes; and in the event of the dissolution or determination of any society, or the division or appropriation of the funds thereof, except in the way herein-before provided, any trustee or other officer or person aiding or abetting therein shall, on conviction thereof by two Justices, be committed to the common gaol or House of Correction, there to be kept to hard labour for any term not exceeding three calendar months, as to such justices shall seem meet.

Societies may
unite with
others, or
one society
may transfer
its engage-
ments to
another.

XIV. It shall be lawful for any two or more societies established under this or any of the Acts hereby repealed to unite and become incorporated in one society, with or without any dissolution or division of the funds of such societies or either of them; or a society formed and established under this Act or any of the said repealed Acts may be allowed to transfer its engagements to any other Friendly Society, if any other such society shall undertake to fulfil the engagements of such society, upon such terms as shall be agreed upon by the major part of the trustees, and also of the committee of management of both societies, or the majority of the members of each of such societies at a general meeting convened for the purpose.

Minors may
be elected as
members.

XV. A person under the age of twenty-one may be elected or admitted as a member of any society established under this Act or any of the Acts hereby repealed, the rules of which do not prohibit such election, and may and he is hereby

empowered to execute all necessary instruments and to give all necessary acquittances: Provided always, that during his nonage he shall not be competent to hold any office of director, trustee, treasurer, or manager of such society.

Buildings for
the Purpose
may be pur-
chased or
leased.

XVI. It shall be lawful for the trustee or trustees for the time being of any Friendly Society formed and established under this Act or under any of the Acts hereby repealed, with the consent of a majority of the members thereof present at a special or general meeting of the society, to purchase, build, hire, or take upon lease any building for the purpose of holding such meetings, and to adapt and furnish the same, and to purchase or hold upon lease any land not exceeding one acre for the said purpose of erecting thereon a building for holding the meetings of the society, and such trustee or trustees shall thereupon hold the same in trust for the use of such society; and, with the like consent as aforesaid, such trustee or trustees may mortgage, sell, exchange, or let such building or any part thereof; and the receipt in writing of such trustee, or one of such trustees for the time being, shall be a legal discharge for the money arising from such mortgage, sale, exchange, or letting; and no mortgagee, purchaser, tenant, or assignee shall be bound to inquire into or ascertain or prove the consent aforesaid, to verify his title: Provided always, that any building purchased or appropriated for the purpose aforesaid already belonging to or in the possession of any Friendly Society heretofore formed and established under the said repealed Acts or any of them may be holden and dealt with as if it had been acquired under this Act; and the land or buildings which may be vested in the treasurer, trustee, or other officer thereof for the time being shall thereupon vest in the trustee or trustees for the time being of such society, for the same estate and interest as the said treasurer, trustee, or other officer may have therein, without any conveyance or assignment whatever: Provided nevertheless, that all money spent in purchasing, building, hiring, or taking upon lease any building for the purpose of holding such meetings, and in adapting and furnishing the same, be raised according to the rules of the society on such behalf inserted; and this section shall apply to any society registered under the Industrial and Provident

Society's Act, 1852, and to any building or land to be purchased, built, hired, or taken on lease for the purposes of the labour, trade, or handicraft of such society, in all respects as hereby enacted with regard to any building or land for the holding the meetings of any friendly society.

Trustees,
how ap-
pointed.

XVII. Every friendly society established under this Act shall, at some meeting of its members, and by a resolution of the majority of the members then present, nominate and appoint one or more person or persons to be trustee or trustees for the said society, and the like in the case of any vacancy in the said office ; and a copy of the resolution so appointing such person or persons to the Office of trustee, and signed by such trustee or trustees and by the secretary of the said society, shall be sent to the registrar, to be by him deposited with the rules of the said society in his custody ; Provided always, that where no trustee shall have been appointed in any society established under any one of the Acts hereby repealed, the treasurer thereof, or other person who has custody of the monies of such society, shall be taken to be a trustee within the meaning of this Act.

Property of
the Society
vested in
them.

XVIII. All real and personal estate whatsoever belonging to any such society established under this Act or any of the Acts hereby repealed shall be vested in such trustee or trustees for the time being, for the use and benefit of such society and the members thereof, and the real or personal estate of any branch of a society shall be vested in the trustees of such branch, and be under the control of such trustee or trustees, their respective executors or administrators, according to their respective claims and interest, and upon the death or removal of any such trustee or trustees the same shall vest in the succeeding trustee or trustees for the same estate and interest as the former trustee or trustees had therein, and subject to the same trusts, without any conveyance or assignment whatsoever, save and except in the case of Stocks and Securities in the Public Funds of Great Britain and Ireland, which shall be transferred into the name or names of such new trustee or trustees ; and in all actions or suits or indictments, or summary proceedings before magistrates, touching or concerning any such property, the same shall be stated to be

the property of the person or persons for the time being holding the said office of trustee, in his or their proper name or names, as trustees of such society, without any further description.

Actions, &c.,
by or against
them.

XIX. The trustee or trustees of any such society are hereby authorized to bring or defend, or cause to be brought or defended, any action, suit, or prosecution in any Court of Law or Equity, touching or concerning the property, right, or claim to property of the society for which he or they are such trustee or trustees as aforesaid; and such trustee or trustees shall and may, in all cases concerning the real or personal property of such society, sue and be sued, plead and be impleaded, in any Court of Law or Equity, in his or their proper name or names, as trustee or trustees of such society, without other description; and no such action, suit, or prosecution shall be discontinued or shall abate by the death of such person, or his removal from the office of trustee, but the same shall and may be proceeded in by or against the succeeding trustee or trustees as if such death or removal had not taken place; and such succeeding trustee or trustees shall pay or receive the like costs as if the action or suit or prosecution had been commenced in his or their name or names, for the benefit of or to be reimbursed from the funds of such society.

Limitation of
his responsi-
bility.

XX. Provided nevertheless, That no trustee or trustees of any such society shall be liable to make good any deficiency which may arise or happen in the funds of such society, but shall be liable only for the monies which shall be actually received by him on account of such society.

Treasurer to
give security.

XXI. The treasurer of every such society, and every treasurer hereafter appointed in any society established under any of the repealed Acts, or any other officer who is required by the rules to give security, shall, before he take upon himself the execution of his office, become bound with one sufficient surety, in a bond according to the form set forth in the third schedule to this Act, or give the security of a Guarantee Society established in London, in such penal sum as the society or the committee of management shall direct and appoint, conditioned for his just and faithful execution of his said office of treasurer, and

for rendering a just and true account of all monies received or paid by him on account of the said society at such time as the rules of the said society shall direct and appoint, and at such times as he shall be required so to do by the trustee or trustees of the said society, or by a majority of the members present at any meeting of such society; and every such bond shall be given to the trustee or trustees of the said society for the time being; and if the same shall at any time become forfeited, it shall be lawful for such trustee or trustees for the time being to sue upon such bond for the use of such society; and in Scotland such bond shall have the same force and effect as a bond there in use duly attested and completed, and containing a clause of registration for execution as well as for preservation in the books of Council and Session and other Judges' books competent, and shall be registered in such books accordingly, with a view to diligence.

Treasurer to
account.

XXII. Every such treasurer or other officer, whether appointed before or after the passing of this Act, at such times as by the rules of such society he should render such account as aforesaid, or upon being required so to do by the trustee or trustees of such society, or by a majority of the said committee of management, or by a majority of the members present at a meeting of the said society as aforesaid, within seven days after such requisition shall render to the trustee or trustees of the society, or to the said committee of management, or to the members of such society at a meeting of the society, a just and true account of all monies received and paid by him since he last rendered the like account, and of the balance then remaining in his hands, and of all bonds or securities of such society, which account the said trustee or trustees or committee of management shall cause to be audited by some fit and proper person or persons by them to be appointed; and such treasurer, if thereunto required, upon the said account being audited, shall forthwith hand over to the said trustee or trustees the balance which on such audit shall appear to be due from him, and shall also, if required, hand over to such trustee or trustees all securities and effects, books, papers, and property of the said society in his hands or custody; and if he fail to do so the trustee or trustees of the said society may sue

upon the bond aforesaid, or may sue such treasurer in the County Court of the district, or in any of the Superior Courts of Common Law, or in any other Court having jurisdiction, for the balance appearing to have been due from him upon the account last rendered by him, and for all the monies since received by him on account of the said society, and for the securities and effects, books, papers, and property in his hand or custody, leaving him to set off in such action the sums, if any, which he may have since paid on account of the said society; and in such action the said trustee or trustees shall be entitled to recover their full costs of suit, to be taxed as between attorney and client.

Property how
recovered, if
the officer
die, or be-
come bank-
rupt or in-
solvent.

XXIII. If any person already appointed or employed or hereafter to be appointed or employed to or in any office in any Friendly Society established under this Act or under any of the Acts hereby repealed, whether such appointment or employment was before or after the legal establishment of such society, and having in his hands or possession, by virtue of his office, any monies or property whatsoever of such society, or any deeds or securities belonging to such society, shall die, or become bankrupt or insolvent, or have any execution or attachment or other process issued against him or any part of his property, or shall have any action or diligence raised against his lands, goods, chattels, or effects, or property or other estate, heritable or moveable, or shall make any assignment, disposition, assignation, or other conveyance for the benefit of his creditors, the heirs, executors, administrators, or assignees of every such officer, and every other person having or claiming right to the property of such officer, and the Sheriff or other person executing such process, and the party using such action or diligence respectively, shall, upon demand in writing made by the treasurer or by the trustee or any two of the trustees of such society, or any person appointed at some meeting of the society to make such demand, deliver and pay over all such monies, property, deeds, and securities belonging to such society to such person as such treasurer or trustees shall appoint, and shall pay, out of the estate, assets, or effects, heritable or moveable, of such officer, all sums of money due which such officer shall have received, before any other of his

debts are paid, and before any other claim upon him shall be satisfied, and before the money directed to be levied by such process as aforesaid, or which may be recovered or recoverable under such diligence, is paid over to the party issuing such process or using such diligence ; and all such assets, lands, goods, chattels, property, estates, and effects shall be bound to the payment, discharge, and satisfaction of such claims.

Punishment
of fraud in
withholding
money, &c.

XXIV. If any officer, member, or other person, being or representing himself to be a member of such society, or the nominee, executor, administrator, or assignee of a member thereof, or any person whatsoever, by false representation or imposition, shall obtain possession of any monies, securities, books, papers, or other effects of such society, or having the same in his possession shall withhold or misapply the same, or shall wilfully apply any part of the same to purposes other than those expressed or directed in the rules of such society, or any part thereof, it shall be lawful in England for any Justice of the Peace acting in the County or Borough in which the place of business of such society shall be situated, upon complaint made by any person on behalf of such society, to summon the person against whom such complaint is made to appear at a time and place to be named in such summons ; and any two Justices present at the time and place mentioned in such summons shall proceed to hear and determine the said complaint, in manner directed by the Act passed in the eleventh and twelfth years of Her present Majesty Chapter Forty-three ; and in Scotland every such offence may be prosecuted by summary complaint at the instance of the Procurator Fiscal of the County, or of the society, with his concurrence, before the Sheriff ; and if the said Justices or Sheriffs respectively shall determine the said complaint to be proved against such person, they shall adjudge and order him to deliver up all such monies, securities, books, papers, or other effects to the society, or to repay the amount of money applied improperly, and to pay, if they think fit, a further sum of money not exceeding twenty pounds, together with costs not exceeding twenty shillings ; and, in default of such delivery of effects, or repayment of such amount of money, or payment of such penalty and costs aforesaid, the said Justices or

Sheriffs may order the said person so convicted to be imprisoned in the Common Gaol or House of Correction, with or without hard labour, for any time not exceeding three months : Provided, that nothing herein contained shall prevent the said society, or in Scotland Her Majesty's Advocate, from proceeding by indictment against the said party ; Provided also, that no person shall be proceeded against by indictment if a conviction shall have been previously obtained for the same offence under the provisions of this Act.

Rules to be
made.

XXV. Before any Friendly Society shall be established under this Act, the persons intending to establish the same shall agree upon and frame a set of rules for the regulation, government, and management of such society ; and in such rules they may, amongst other things, make provision for appointing a general committee of management of such society, and delegating to such committee all or any of the powers given by this Act to the members of Friendly Societies formed or established under or by virtue of the same ; and such rules shall set forth,

1. The name of the society and place of meeting for the business of the society :
2. The whole of the objects for which the society is to be established, the purposes for which the funds thereof shall be applicable, and the conditions under which any member may become entitled to any benefit assured thereby, and the fines and forfeitures to be imposed on any member of such society :
3. The manner of making, altering, amending, and rescinding rules :
4. A provision for the appointment and removal of a general committee of management, of a trustee or trustees, treasurer, and other officers :
5. A provision for the investment of the funds, and for an annual or periodical audit of accounts :
6. The manner in which disputes between the society and any of its members, or any person claiming by or through any member, or under the rules, shall be settled :

And the rules of every such society shall provide that all monies

received or paid on account of each and every particular fund or benefit assured to the members thereof, their husbands, wives, children, fathers, mothers, brothers or sisters, nephews or nieces, for which a separate table of contributions payable shall have been adopted, shall be entered in a separate account, distinct from the monies received and paid on account of any other benefit or fund, and also that a contribution shall be made to defray the necessary expenses of management, and a separate account shall be kept of such contributions and expenses.

Copies to be sent to the Registrar, and his certificate obtained.

XXVI. Two printed or written copies of such rules, signed by three of the intended members and the secretary or other officer, shall be transmitted to the registrar aforesaid, and the said registrar shall advise with the secretary or other officer, if required, for the purpose of ascertaining whether the said rules are calculated to carry into effect the intentions and object of the persons who desire to form such society, and if the registrar shall find that such rules are in conformity with Law and the Provisions of this Act, he shall give a certificate in the form set forth in the Second Schedule to this Act, and shall return one of the said copies to the said society, and shall keep the other in such manner as shall from time to time be directed by one of Her Majesty's Principal Secretaries of State, and for which certificate no fee shall be payable to the said registrar; and all rules, when so certified as aforesaid, shall be binding on the several members of the said

Actuary's certificate to be sent with the copies in case of tables of annuities.

society: Provided always, that it shall not be lawful for the said registrar to grant any such certificate to a society assuring to any member thereof a certain annuity or certain superannuation, deferred or immediate, unless the tables of contributions payable for such kind of assurance shall have been certified under the hand of the actuary to the Commissioners for Reduction of the National Debt, or by an actuary of some Life Assurance Company established in London, Edinburgh, or Dublin, who shall have exercised the profession of actuary for at least five years, and such certificate be transmitted to the registrar, together with the copies of the rules aforesaid.

Rules may be altered, amended, rescinded, or new rules made.

XXVII. After the rules of a Friendly Society shall have been so certified by the registrar as aforesaid, it shall be lawful for such society, by resolution at a meeting specially called for that purpose, to alter, amend, or rescind the same or any of them, or to make new rules ; and it shall be lawful for any Friendly Society formed and established under any of the Acts hereby repealed to alter, amend, or rescind the rules by which their society is governed, regulated, or managed, or to make new rules : Provided always, that two copies of the proposed alterations or amendments, and of such new rules, signed by three members of such society, and the secretary or other officer, shall be transmitted to the said registrar, to one of which shall be attached a declaration by the secretary or one of the officers of such society that in making the same the rules of such society respecting the making, altering, amending, and rescinding rules, or the directions of the Act under which such society was established, have been duly complied with ; and if the said registrar shall find that such alterations, amendments, or new rules are in conformity with law, he shall give to the Society a certificate in the form set forth in the Schedule to this Act, and return one of the copies to the Society, and shall keep the other, with the rules of such society, in his custody, and for which certificate no fee shall be payable to the said registrar, and as against such member or person such certificate shall be conclusive of the validity thereof ; and all rules, alterations, and amendments, when so certified as aforesaid, shall be binding on the several members of the said society, and all persons claiming on account of a member or under the said rules ; but unless and until the same shall be so certified as aforesaid such rules, alterations, and amendments shall have no force or validity whatsoever.

When place of Meeting is altered, Notice to be sent to Registrar.

XXVIII. Whenever any Friendly Society established under this Act or under any of the Acts hereby repealed shall change its place of business, notice of such change, under the hands of two of the trustees or three members and secretary or other officer, shall, within fourteen day thereafter, be sent to the said registrar.

Circulating
also copies
of rules, &c.
a misde-
meanor.

XXIX. If any person shall give to any member of a Friendly Society established under this Act or under any of the said repealed Acts, or to any person intending or applying to become a member of such society, a copy of any rules, or of any alterations or amendments of the same, other than those respectively which have been enrolled with any Clerk of the Peace or certified by the registrar, with a copy of his certificate appended thereto, under colour that the same are binding upon the members of such society, or shall make any alterations in or addition to any of the rules or tables of such society after they shall have been respectively enrolled or certified by the registrar, and shall circulate the same, purporting that they have been duly enrolled or certified under this or any of the said repealed Acts, when they have not been so duly enrolled or certified, every person so offending shall be deemed guilty of a misdemeanor.

Rules, how
received in
evidence.

XXX. All rules and tables of any society established under this Act or any of the said repealed Acts, and all alterations and amendments thereof, and all copies thereof or extracts therefrom, and all writings and documents relating to a Friendly Society, and purporting to be signed by the registrar, shall, in the absence of any evidence to the contrary, be received in all Courts of Law and Equity, and elsewhere, without proof of the signature thereto.

On death of
Member,
sum under
50*l.* may be
paid without
administra-
tion.

XXXI. When, on the death of any member of a society established under this Act or any of the said repealed Acts, a sum of money not exceeding fifty pounds shall become payable, the same shall be paid by the trustees of such society to the person directed by the rules thereof, or nominated by the deceased, in writing deposited with the secretary (such person being the husband, wife, father, mother, child, brother or sister, nephew or niece of such member); and in case there shall be no such direction or nomination, or the person so nominated shall have died before the deceased member, or in case the member shall have revoked such nomination, then such sum shall be paid to the person who shall appear to the said trustees to be entitled under the Statute of Distributions to receive the same, without taking out Letters of Administration in England or Ireland, and without Confirmation in Scotland: Provided, that

Indemnity to
trustees.

that wherever the trustee or trustees of any such society, after the decease of any member thereof, shall have paid and divided any such sum of money to or amongst any person or persons who shall at the time of such payment appear to such trustee or trustees to be entitled to the effects of any deceased member who has died intestate, without having appointed any nominee as aforesaid, the payment of any such sum shall be valid and effectual with respect to any demand from any other person or persons as next of kin of such deceased member, or as the lawful representative or representatives of such member, against the funds of such society or against the trustees thereof; but nevertheless such next of kin or representative shall have his or her lawful remedy for such money so paid as aforesaid against the person or persons who shall have received the same.

Funds, how
invested.

XXXII. The trustee or trustees of every Friendly Society established under this Act or any of the said repealed Acts shall from time to time, with the consent of the committee of management of such society, or of a majority of the members of such society present at a general or special meeting thereof, or in accordance with the rules of such society, invest the funds of such society, or any part thereof, to any amount, in any Savings Bank, or in the Public Funds, or with the Commissioners for the Reduction of the National Debt, as hereinafter mentioned, or in such other security as the rule of such society may direct, not being the purchase of house or land, (save and except the purchase of buildings wherein to hold the meetings or transact the business of such society, as herein-before mentioned,) and not being the purchase of shares in any joint stock company or other company, with or without charter of incorporation, and not being personal security, except in the case of a member of one full year's standing at least, and in respect of a sum not exceeding one half the amount of his assurance on life, such member providing the written security of himself and two satisfactory sureties for repayment, and in case of such member's death before repayment the amount of such advance, with interest, may be deducted from the sum so assured, without prejudice in the meantime to the operation of such security.

Funds may be
invested with
the Commis-
sioners of the
National
Debt.

XXXIII. Every Friendly Society established under this Act which does not assure the payment in any event of a sum exceeding two hundred pounds, or an annuity exceeding thirty pounds per annum, may pay any sum of money not less than fifty pounds into the Bank of England or Ireland, to the account of the Commissioners for the Reduction of the National Debt upon the declaration of the Trustee or of the trustees, or any two or more of them, that such monies belong exclusively to the said society; and the cashier of the Bank of England is hereby required to receive all such monies, and to place the same to the account raised in the name of the said Commissioners in the book of the bank, named "The Fund for Friendly Societies;" and if such declaration shall not be true, then and in every such case the sum of money so paid in on such declaration shall be forfeited to the said Commissioners, and shall be applied by them in the manner directed by any act or acts for the time being in force relating to Savings' Banks with respect to the account of such banks; and the Regulation of receipts, certificates, or orders concerning Savings' Banks shall be deemed applicable to monies paid in as aforesaid under the authority of this act, as if the same had been herein repeated; and every such society, on paying money directly into the bank as aforesaid, shall be entitled to receive receipts bearing interest at the rate of Twopence per cent. per diem: Provided, that every society which shall deposit any part of its funds in any Savings' Bank, or with the Commissioners for Reduction of the National Debt, shall furnish to the said Commissioners from time to time such accounts as they may require in reference to the funds so deposited.

What inter-
est old so-
cieties shall
have.

XXXIV. Every Society already established under any of the acts hereby repealed, which shall have heretofore invested any part of its funds with the Commissioners for the Reduction of the National Debt, shall be entitled to pay into the Bank of England or Ireland in sums of not less than fifty pounds, money received from members on account of assurances made before the passing of this Act, and to receive receipts for the same bearing interest at such rate or rates as

such society has hitherto been entitled to receive on account of such assurances; that is to say, for money invested with the Commissioners by any society legally established before the twenty-eighth day of July, in the year one thousand eight hundred and twenty-eight, on account of any assurance made before the fifteenth day of August in the year one thousand eight hundred and fifty, threepence per centum per diem; and on account of any assurance effected after that day, twopence per centum per diem; and for money invested with the Commissioners by any society established between the twenty-eighth day of July in the year one thousand eight hundred and twenty-eight and the fifteenth day of August in the year one thousand eight hundred and fifty, on account of assurances made before the fifteenth day of August in the year one thousand eight hundred and fifty, twopence halfpenny per centum per diem; and on account of any assurance effected after that day, twopence per centum per diem; and for money invested with the Commissioners by any society established since the fifteenth day of July one thousand eight hundred and fifty, the sum of twopence per centum per diem; provided that the trustees of every society which shall have invested or shall invest any part of its funds with the said Commissioners shall furnish from time to time such accounts and returns as the said Commissioners shall require, and shall satisfy the said Commissioners that they are legally entitled to receive such interest as aforesaid, and to make such further investment.

Re-deposit-
ing of money
withdrawn.

XXXV. Where any Friendly Society shall withdraw money invested by them with the Commissioners for the Reduction of the National Debt, such society shall not be entitled to make any further deposit with the said Commissioners without the consent of the said Commissioners, or of the Comptroller General or Assistant Comptroller under them.

Transfer of
stock.

XXXVI. Whenever it shall happen that any person, being or having been a trustee of any society established under this act or any act hereby repealed, and whether he shall have been appointed before or after the legal establishment thereof, in whose name any part of the several stocks, annuities, and funds belonging to any such society, transferable

at the Bank of England or Ireland, or in the books of the Governor and Company of the Bank of England or Ireland, or in any Savings' Bank, is or shall be standing, shall be out of England, Ireland or Scotland respectively, or shall have been removed from his office of trustee, or shall be a bankrupt, insolvent, or lunatic, or it shall be unknown whether such trustee is living or dead, it shall be lawful for the Registrar, after receiving an application 'in writing from the secretary of the society and three members thereof, and upon proof satisfactory to such registrar, to direct the Accountant-General or other proper officer for the time being of the said Governor and Company of the Bank of England or Ireland, or of any Savings' Bank, to transfer in the books of the said Company or of the said Savings' Bank such stocks, annuities, or funds standing as aforesaid, into the name of the trustee who shall be newly appointed, and to pay to him from time to time the dividends thereof; and if one of two or more such trustees shall die, or be removed from his office of trustee, or become bankrupt or insolvent, it shall be lawful for the registrar, on the like application, to direct that the other or others of the trustees shall transfer such stock, annuities, or funds into the name of such person as may have been appointed in his stead, jointly with the continuing trustee or trustees.

Power of
Attorney, &c.
not liable to
stamp duty.

XXXVII. No copy of rules, nor power, warrant, or letter of attorney granted by any person as trustee of any society established under this Act or any of the Acts hereby repealed, for the transfer of any share in the public funds standing in the name of such trustee, nor any order or receipt for money contributed to or received from the funds of any such society, by any person liable or entitled to pay or receive the same by virtue of the rules thereof or of this Act, nor any bond to be given to or on account of any such society, or by the treasurer or any officer thereof, nor any draft or order, nor any form of policy, nor any appointment of any agent, nor any certificate or other instrument for the revocation of any such appointment, nor any other document whatever, required or authorized by or in pursuance of this Act or the rules of any society, shall be

Limitation
of exemp-
tions to so-

liable to stamp duty: Provided that no exemption from any of the duties granted by any Act or Acts relating

cieties not
assuring
above 200*l*.

to stamp duties shall be deemed to extend to any society which shall assure the payment of money exceeding two hundred pounds, or which shall assure the payment of any money on the death of a member to any person, except executors, administrators, or assigns of such member, or the husband, wife, father, mother, child, brother, sister, nephew or niece of such member.

No member
to receive
more than
200*l*. or 30*l*.
a year from
any number
of societies.

XXXVIII. If any person shall become a member of more than one Society, whereby certain benefits shall accrue on account of the same kind of assurance from more than one society, it shall not be lawful for him, or for any person entitled through or under him or by reason of his membership, or for any number of such persons in the aggregate, to receive more than two hundred pounds, or in the case of annuities, thirty pounds a year, from such societies collectively; and in any case where a person shall so as aforesaid be a member of more than one society, and he, or any other person or persons, shall be entitled to any benefit in gross or by way of annuity from any such society, he, or (as the circumstances may require) every such other person, shall, before he shall receive any such benefit from any of such societies, make and sign a declaration that the total value of all benefits accruing or which shall have accrued in respect of any one kind of assurance does not exceed the value of two hundred pounds, or, in the case of annuities, thirty pounds a year; and it shall be lawful for any society to require any member or any other person who shall be entitled to any such benefit, before he shall receive the same, to make and sign a declaration to the same effect, or that such member was not, when the benefit accrued, a member of any other association; and if any person shall knowingly make any false or fraudulent declaration in any such case he shall be guilty of misdemeanor.

Trustees may
subscribe to
a hospital or
provident
institution.

XXXIX. The trustees of any Friendly Society may, out of the funds thereof, subscribe to any hospital, infirmary, charitable or other provident institution, such annual or other sum as may be agreed upon by the Committee of Management, or by a majority of the members at a

meeting called for that purpose, in consideration of any member of such society, his wife, child, or other person nominated, being eligible to receive the benefits of such hospital or other institution according to the rules thereof.

As to the determination of disputes according to the rules.

XL. Every dispute between any member or members of any society established under this Act or any of the Acts hereby repealed, or any person claiming through or under a member, or under the rules of such society, and the trustee, treasurer, or other officer, or the Committee thereof, shall be decided in a manner directed by the rules of such society, and the decision so made shall be binding and conclusive on all parties, without appeal: provided that where the rules of any society established under any of the acts hereby repealed shall have directed disputes to be referred to justices, such disputes shall from and after the first day of August one thousand eight hundred and fifty-five, be referred to and decided by the County Court as herein-after mentioned.

In what cases by the County Court.

XLI. In all Friendly Societies established under this Act or any of the said repealed Acts, all applications for the removal of any trustee, or for any other relief, order, or direction, or for the settlement of disputes that may arise or may have arisen in any society the rules of which do not prescribe any other mode of settling such disputes, or to enforce the decision of any arbitrators, or to hear or determine any dispute, if no arbitrator shall have been appointed or if no decision shall be made by the said arbitrators within forty days after application has been made by the member or person claiming through or under a member or under the rules of the society, shall be made to the County Court of the district within which the usual or principal place of business of the society shall be situate; and such court shall, upon the application of any person interested in the matter, entertain such application, and give such relief, and make such orders and directions in relation to the matter of such application, as herein-after mentioned, or as may now be given or made by the Court of Chancery in respect either of its ordinary or its special or statutory jurisdiction; and the decision of such County Court upon and in relation to such application as aforesaid shall not be subject to

any appeal: Provided always, that in Scotland the sheriff within his county, and in Ireland the assistant barrister within his district, shall have the same jurisdiction as is hereby given to the Judge of a County Court.

Order of
County
Court,
how enforced.

XLII. In all cases where the order of such County Court shall be for the payment of money, the same may be enforced in the same manner as the ordinary judgments of such court are enforced; but where the order of the said court shall be for the doing of some act, not being for the payment of money, it shall be lawful for the Judge of such County Court in his said order to order the party to do such act, or that in default of his doing it he shall pay a certain sum of money; and in case he refuse or neglect to do the act required, upon demand in that behalf, the sum of money or penalty in the said order may then be recovered in the same manner as a judgment for debt or damages in such court; and it shall not be lawful to remove the same by certiorari or other writ or process to any superior Court of Record.

Lord Chan-
cellor may
make orders
for regulat-
ing the pro-
ceedings in
this respect.

XLIII. Provided, however, That the Lord Chancellor may make such orders for regulating the proceedings by and before the Judges of County Courts under this Act as he may think fit; and in Scotland the Court of Session shall have the like power by Act of Sederunt as regards proceedings before sheriffs under this Act; and, subject to such orders and Acts of Sederunt respectively, such judges and sheriffs may regulate the proceedings before them respectively so as to render them as summary and inexpensive as conveniently may be.

In the case of
societies
whose rules
are not certi-
fied, disputes
between the
society and
its own mem-
bers to be
settled as in
cases of certi-
fied societies.

XLIV. In the case of any Friendly Society established for any of the purposes mentioned in Section IX. of this Act, or for any purpose which is not illegal, having written or printed rules, whose rules have not been certified by the Registrar, provided a copy of such rules shall have been deposited with the Registrar, every dispute between any member or members of such society, and the trustees, treasurer, or other officer, or the committee of such society, shall be decided in manner herein-

before provided with respect to disputes, and the decision thereof, in the case of societies to be established under this Act, and the sections in this Act provided for such decision, and also the section in this Act which enacts a punishment in case of fraud or imposition by an officer, member, or person. shall be applicable to such uncertified societies: Provided always, that nothing herein contained shall be construed to confer on any such society whose rules shall not have been certified by the Registrar, or any of the members or officers of such society, any of the powers, exemptions, or facilities of this Act, save and except as in and by this section is expressly provided.

Returns to
the Registrar,
when and
how to be
made.

XLV. The trustees of Friendly Societies established under this Act or under any of the repealed Acts, or the officer thereof appointed to prepare returns, shall, once in every year, in the months of January, February, or March, transmit to the Registrar a general statement of the funds and effects of such society during the past twelve months, or a copy of the last annual report of such society, and shall also, within three months after the expiration of the month of December one thousand eight hundred and fifty-five, and so again within three months after the expiration of every five years succeeding, transmit to the said Registrar a return of the rate or amount of sickness and mortality experienced by such society within the preceding five years, in such form as shall be prepared by the said Registrar, and an abstract of the same shall be laid before Parliament; and the Registrar shall also lay before Parliament every year a report of his proceedings, in his office of Registrar, and of the principal matters transacted by Friendly Societies which have come under his cognizance during the past year.

Certain so-
cieties estab-
lished for
granting an-
nual pay-
ments to
nominees
before the
year 1850 to
have privi-
leges of this
Act.

XLVI. And whereas under the provisions of the Acts hereby repealed, or some of them, certain associations or societies have been formed in England and Ireland for the provident and charitable purpose of securing annual payments to the nominees of the members thereof, contingent upon the death of such members, and have invested their funds in the manner provided by such Acts, and doubts may arise whether such asso-

ciations or societies will be entitled to the exemptions and privileges by this Act conferred in the event of such annual payments amounting in the aggregate to more than thirty pounds; and it is expedient to remove such doubts, and to give protection to such associations or societies, and to the funds thereof: Be it therefore enacted, that notwithstanding anything in this Act contained to the contrary, all such associations or societies as were founded and subsisting under the provisions of the said Acts previously to the fifteenth day of August one thousand eight hundred and fifty, shall enjoy the exemptions and privileges by this Act conferred on societies to be established under the provisions of this Act as fully as if they had been registered and certified under this Act, and notwithstanding that the contingent annual payments to which the nominees of the present or future members of such associations or societies may be come entitled shall exceed in the aggregate the sum of thirty pounds.

Extra contribution may be demanded of a member serving in the militia.

XLVII. In any case where the rules of any society already enrolled or certified have provided that a member shall be deprived of any benefit by reason of his enrolment or service in the militia, it shall be lawful for the trustees of such society to require of any member a contribution exceeding the rate of contribution hitherto payable by such member, to an amount not exceeding one-tenth of such rate, during the time such member shall be serving out of the United Kingdom, or to suspend all claim of such member to any benefits of such society, and all claim of the society to any contributions payable by such Member, during the time he may be serving in the militia out of the United Kingdom, provided that such suspension shall cease so soon as the said member shall return to the United Kingdom, and he shall thereupon be replaced on the same footing as before he went abroad with the regiment to which he belongs.

Act to apply to societies constituted under the Industrial and Provident Societies Act, 1852.

XLVIII. All the provisions of this Act shall apply to all societies constituted under the Industrial and Provident Societies Act, 1852, in the same manner as the laws in force relating to Friendly Societies at the date of the passing of the said Industrial and Provi-

dent Societies Act, 1852, are by the said last-mentioned Act directed to apply to societies constituted thereunder ; and the limitation hereinbefore contained of the amount of annuities and sums payable on the death of any person, or on any other contingency, in the case of societies established under this Act, shall apply to all societies constituted under the said Industrial and Provident Societies Act, 1852.

Interpreta- tion of "society."	XLIX. The word "Society" shall extend to and include every branch of a society, by whatever name it may be designated.
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Extension of Act.	L. This Act shall extend to Great Britain and Ireland, and the Channel Isles, and the Isle of Man.
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Commence- ment of Act.	LI. This Act shall commence and take effect from the first day of August one thousand eight hundred and fifty-five.
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SCHEDULES referred to by the foregoing Act.

FIRST SCHEDULE.

Reference to Act.	Title of Act.	Extent of Repeal.
33 Geo. 3. c. 54. -	An Act for the Encouragement and Relief of Friendly Societies.	The whole Act.
35 Geo. 3. c. 111. -	An Act for more effectually carrying into execution an Act made in the Thirty-third Year of the Reign of His present Majesty, intituled "An Act for the Encouragement and Relief of Friendly Societies," and for extending so much of the Powers thereof as relates to the framing Rules and Regulations for the better Management of the Funds of such Societies, and the Appointment of Treasurers to other Institutions of a charitable nature.	The whole Act.
36 Geo. 3. c. 68. (Irish)	An Act for the Encouragement and Relief of Friendly Societies.	The whole Act.
43 Geo. 3. c. 111.	An Act for enabling Friendly Societies intended to be established under an Act passed in the Thirty-third Year of the Reign of His present Majesty to rectify Mistakes made in the Registry of their Rules.	
49 Geo. 3. c. 58. -	An Act to explain and render more effectual an Act passed in the Parliament of Ireland, in the Thirty-sixth Year of His present Majesty's Reign, for the Encouragement and Relief of Friendly Societies.	The whole Act.
49 Geo. 3. c. 125. -	An Act to amend an Act made in the Thirty-third Year of his present Majesty, for the Encouragement and Relief of Friendly Societies.	The whole Act.
59 Geo. 3. c. 128. -	An Act for further Protection and Encouragement of Friendly Societies, and for preventing Frauds and Abuses therein.	The whole Act.
6 Geo. 4. c. 74. -	An Act for consolidating and amending the Laws relating to Conveyances and Transfers of Estates and Funds vested in Trustees who are Infants, Idiots, Lunatics, or Trustees of unsound Mind, or who cannot be compelled or refuse to act; and also the Laws relating to Stocks and Securities belonging to Infants, Idiots, Lunatics, and Persons of unsound Mind.	So much of Section II. as relates to Friendly Societies.

Reference to Act.	Title of Act.	Extent of Repeal.
10 Geo. 4. c. 56. -	An Act to consolidate and amend the Laws relating to Friendly Societies.	The whole Act.
2 W. 4. c. 37. -	An Act to amend an Act of the Tenth Year of His late Majesty King George the Fourth, by extending the Time within which pre-existing Societies must conform to the Provisions of that Act.	
4 & 5 W. 4. c. 40. -	An Act to amend an Act of the Tenth Year of His late Majesty King George the Fourth, to consolidate and amend the Laws relating to Friendly Societies.	
3 & 4 Vict. c. 73. -	An Act to explain and amend the Acts relating to Friendly Societies.	The whole Act.
9 & 10 Vict. c. 27. -	An Act to amend the Laws relating to Friendly Societies.	The whole Act.
13 & 14 Vict. c. 115	An Act to consolidate and amend the Laws relating to Friendly Societies.	
15 & 16 Vict. c. 65	An Act to continue and amend an Act passed in the Fourteenth Year of the Reign of Her present Majesty, to consolidate and amend the Laws relating to Friendly Societies.	The whole Act.
16 & 17 Vict. c. 123.	An Act to amend the Laws relating to the Investments of Friendly Societies.	The whole Act.
17 & 18 Vict. c. 50.	An Act to continue an Act of the Twelfth Year of Her present Majesty, for amending the Laws relating to Savings Banks in Ireland, and to authorise Friendly Societies to invest the whole of their Funds in Savings Banks.	Section 2.
17 & 18 Vict. c. 101.	An Act to continue and amend the Acts now in force relating to Friendly Societies.	The whole Act.

SECOND SCHEDULE.

FORM OF REGISTRAR'S CERTIFICATE TO RULES OF FRIENDLY SOCIETIES.

I HEREBY certify, That the foregoing Rules [*or the Alterations or Amendments of the Rules*] of the Society at in the County of are in conformity with Law, [*and in the Case of a new Society*] and that the Society is duly established from the present Date, and is subject to the Provisions and entitled to the Privileges of the Acts relating to Friendly Societies.

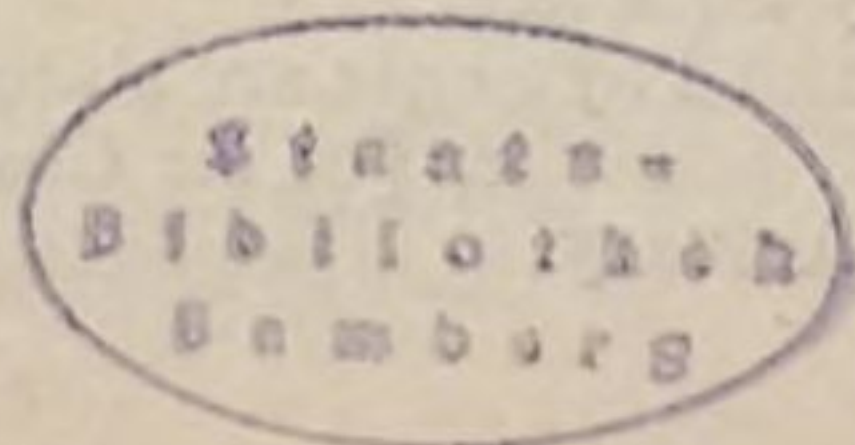
The Rates of Contributions and Payments are stated to have been prepared by A. B., Actuary of or [*as the Case may be*] are not stated to have been prepared by any Actuary.

THIRD SCHEDULE.

FORM of BOND.

KNOW all Men by these Presents, That we, *A.B.* of _____ Treasurer
 &c. [*as the Case may be*] of the _____ Society, established
 at _____ in the County of _____ and *C.D.*
 of _____ (as Surety on behalf of the said *A.B.*)
 are jointly and severally held and firmly bound to *A.B.* of _____
C.D. of _____ and *E.F.* _____ the Trustees of the said
 Society, in the Sum of _____ to be paid to the said *A.B.*, *C.D.*,
 and *E.F.* as such Trustees or their Successors, Trustees for the Time being,
 or their certain Attorney, for which Payment well and truly to be made we
 jointly and severally bind ourselves, and each of us by himself, our and each
 of our Heirs, Executors, and Administrators, firmly by these Presents, sealed
 with our Seals. Dated the _____ Day of _____
 in the Year of our Lord _____ .

Whereas the above-bounden *A.B.* hath been duly appointed Treasurer, &c.
 [*as the Case may be*] of the _____ Society, established as afore-
 said, and he, together with the above-bounden *C.D.* as his Surety, have
 entered into the above-written Bond, subject to the Condition herein-after
 contained : Now therefore the Condition of the above-written Bond is such,
 that if the said *A.B.* shall and do justly and faithfully execute his Office of
 Treasurer, &c. [*as the Case may be*] of the said Society established as afore-
 said, and shall and do render a just and true Account of all Monies received
 and paid by him, and shall and do pay over all the Monies remaining in his
 Hands, and assign and transfer or deliver all Securities and Effects, Books,
 Papers, and Property of or belonging to the said Society in his Hands or
 Custody, to such Person or Persons as the said Society shall appoint,
 according to the Rules of the said Society, together with the proper or legal
 Receipts or Vouchers for such Payments, and likewise shall and do in all
 respects well and truly and faithfully perform and fulfil his Office of Treas-
 urer, &c. [*as the Case may be*] to the said Society, according to the Rules
 thereof, then the above-written bond shall be void and of no effect ; otherwise
 shall be and remain in full force and virtue.



MR. SCRATCHLEY ON ASSOCIATIONS FOR PROVIDENT INVESTMENT.

1.—*Leading Article of the "TIMES," 2nd October, 1860.*

THE 'Report of the Registrar of Friendly Societies' contains the usual testimony to two great evils—one an involuntary evil and the other a voluntary—sickness and drinking. Every Friendly Society has two faces, which it puts on, one for its members and the other for Mr. Tidd Pratt. Its members are attracted to it partly, of course, by the natural foresight of human contingencies, but very much, also, by the pomp and merriment of its festivals, with their brass bands, flags, processions, and all the holiday paraphernalia, together with the temporary occupation of the 'Saracen's Head,' the 'Red Lion,' or the 'Flying Horse.' This is the face that it puts on for its healthy members; but for Mr. Tidd Pratt it puts on the face of sad calculation, expressive of precaution against the calamities to which our mortal state is liable, of judicious estimates of rates of sickness, and care to provide means and resources against the dark day.

"Sickness is the first difficulty that Mr. Tidd Pratt has to deal with. The great and sad fact of human sickness is the basis of all Friendly Societies, which are founded for the object of providing for the wants of the sick man out of the surplus earnings of the healthy man. But here an important question arises. How are you to define sickness? *What constitutes Temporary inability to labour?* This is a fundamental point to decide in laying down the scheme of a Friendly Society, and to ensure the success of its calculations—a correct estimate of sickness. If you are too rigid in defining it, you defeat the object of relief for which the Society is formed; if you are too lax in defining it, you occasion a too large and wholesale pull upon its funds, and so in time break-up the society. This is one great cause of the break-up of Friendly Societies—the disproportion of relieved sickness to the actual funds of the Societies. Fifty-two Friendly Societies broke up last year, most of them from this reason. This is a fatal mistake then; and the first point such Societies should look to is a correct estimate of sickness, in order to bring it within their calculations, and make it fit in with their resources. But this is by no means an easy thing to estimate—the amount of sickness which fairly prevents a man from working.

"In practice," says Mr. SCRATCHLEY, in the 10th edition of his treatise,* which Mr. Tidd Pratt quotes in this Report, 'it is found that certain degrees of ill-health do not produce immediate inability to work. Medical men affirm that labourers, who have not a Friendly Society to fall back upon, often go about their employment with disease of the heart, tubercles in the lungs, and other disorders of considerable severity. Among 120 Cornish miners in actual work, it was ascertained that only 63 had good health; the remainder being all the time suffering from incipient serious maladies.' A compromise is sometimes made under these circumstances, and 'men who have no sick money to draw, with the consent of the inspector or foreman, have their labour mitigated without stopping off work altogether.' Some distinction, then, is necessary, if these Societies are to fulfil their engagements, between '*Friendly Societies' sickness*' and '*Medical sickness*.' That is to say, the ill-health of a labouring man cannot be estimated exactly in the same way in which that of one of the upper classes of society would be. There is a difference of standard, and for this necessary reason, that a man who is comfortably off can afford to be more indulgent to his health than a poor man can. This is one of the trials of poverty, one of the grievances which attach to it as a natural dispensation, and the lot of the majority of the human race—viz., that a man must often work when he is not in sound working health. It seems hard, but there is nothing so inexorable as

* *Treatise on Associations for Provident Investment*, by ARTHUR SCRATCHLEY, M.A.,

Corresponding Member of the Royal Commission of Belgium; One of the Actuaries authorized to certify Friendly Societies; Consulting Actuary to the Tithe Trust; One of the Examiners (1850 and 1851) of the Institute of Actuaries of Great Britain and Ireland; Late Fellow and Sadlerian Lecturer of Queen's College, Cambridge; Actuary to the Western Life Assurance Society, 3, Parliament Street, London, &c. &c. &c.

New Edition, in Three Divisions, 1050 pp., £1. 7s. 6d. Published by Longmans, Paternoster Row; and Laytons, 150, Fleet Street (Division I., at 14s., and Division III., at 7s. 6d., can be purchased separately).

Division I.—*On Savings Banks and Banks of Deposit.*

„ II.—*Building Societies, Tontines, and Colonization.* 3rd Edition.

„ III.—*Friendly Societies, and Life Assurance Societies.* 10th Edition.

The work contains Rules, Tables, Acts of Parliament, and numerous Statistics, for the use of Trustees, Managers, Solicitors, and other Persons interested in Industrial Associations.

Continuation of the Leading Article of the "TIMES."

the necessity of society and the law which regulates the extent of such indulgence; the simple fact being this, that society, taking it as a whole, rich and poor together, has not wealth enough to allow more than a certain amount of consideration to health upon a large scale. Labour is the wealth of society. It is a pure case of compromise between two great laws, an attempt to escape which would issue in injury to the labourer himself; for he, in common with the whole community, depends upon the amount of the sum total of labour. We may add, that the force of habit makes such a necessity, perhaps, less of a trial than at first sight it would appear to be. We see men everywhere working in spite of health—they choose to do so; the difficulty is to make them leave off work; they say they will die in harness. In all situations, and all kinds of employments and pursuits, it is the same. Your great engineer works till he drops; so does your lawyer, so does your scholar. Casaubon tried, at the earnest entreaties of his friends, a few days' idleness, but returned to his work again, with the remark, that it was easier to bear illness doing something than doing nothing. And the same rule applies to the labouring man with even greater force. He is a creature of habit more than the educated man is. There may be want of heart in the way in which he handles his spade or stumps after the plough, and he may be ready to drop sometimes in the course of a day's work; but would he be a bit happier leaning on his own cottage wall all day long? He would be a great deal more uncomfortable; what he dreads more than anything is being thrown upon himself. Work is his life, and his day is a blank to him without it—his mind becomes the haunt of dreary thoughts. On the whole, if he can work at all, his ill-health is a more manageable thing moving than standing still.

"This principle operates a good deal as a natural and self-acting security to Friendly Societies. And with respect to the lazy, who would be disposed to take unfair advantage of the common purse, all that need be said is that care must be taken to judge correctly of the member's ill-health, how far it impedes his power of work, and how far it still allows him to work. Mr. SCRATCHLEY, however, lays down an estimate of health, drawn from the actual data of successfully-working Friendly Societies, and he puts it down in the shape of a law:—'*There is a certain constant minimum rate of sickness per annum to which human beings, on the average of a large number of lives, are subject at any period of life.*' This rate depends upon race, climate, &c., but in this country he places it at between five and seven days' sickness per annum. This is the first half of Mr. SCRATCHLEY's law. The second is, that:—'*at each age every individual is exposed, according to his occupation, rank of life, &c., to an excess of sickness over such constant sickness, increasing with his years, and equal to the sum of the excesses in the 5th and 10th years preceding.*' Thus the difference between the rates of sickness for ages 35 and 30 equals the difference between the rates for ages 30 and 20.' A table is constructed by Mr. SCRATCHLEY upon this principle, and the figures on it agree, within a decimal fraction, with the figures in the Government tables. Such figures do not, of course, constitute an administrative guide to Friendly Societies, before whom the case has not come in the form of ultimate tabular results, but in the shape of actual particular sicknesses of particular persons, which must be decided on by the doctor: but they show what is the amount of recognised illness with which these Societies can afford to cope.

"The drinking side of the Friendly Society comes in for its notice in the Report, and some curious disclosures appear in letters from complaining members of these Societies. The publican reigns in too many of them, and the system is, 'Spend all the management fund each meeting night—it will be some recompense towards the loan of his room.' The room is *lent*, and the return comes in the shape of the custom. In all the Friendly Societies of one town, it is a rule that for every shilling that goes to the sick, 2*d.* goes in beer—'for the good of the house.' 'I must lose a day's work,' says one correspondent, 'and pay 2*s.* 6*d.* for a dinner, or pay a fine of 1*s.* 3*d.* for the privilege of stopping away.' In this way the residents often live upon the distant members, and eat capital dinners at their expense. Members are not allowed to be present at the despatch of business, 'unless they have paid for their liquor ticket.' The donations of honorary members go to paying for the brass band. The accounts are managed adroitly, and the expenses of monthly meetings and annual feasts are 'kept out of the balance-sheet altogether,' as presented to Mr. Tidd Pratt, only the residuum of the 'contributions for the management expenses' which the payment of these irregular expenses have left appearing there. A mean must be struck in these matters. These Societies would not flourish unless they had something in the shape of a merrymaking accompanying them; but in too many the festive element triumphs over the serious one."

2.—From the "ECONOMIST," January 5th, 1861.

"The design of this work, which numbers 1,050 pages, is to give on every branch of Industrial Investment a complete Treatise, viewing each separately, and yet as subdivisions of one connected whole; and Mr. SCRATCHLEY has brought vast knowledge and experience to bear on this comprehensive object.

"Mr. SCRATCHLEY is one of the few men in this country who combine legal and financial ability with the special experience implied as essential to the fulfilment of the task of writing with authority on questions apparently so simple and yet so intricate in their details; and the minute manner, in which every point in the operations of the Institutions dealt with is investigated, cannot fail to excite the reader's admiration. Nor is it less a characteristic of this work that the legal and financial statements given are written in a style that divests apparently dry subjects of their intricacy, and causes the reader to persist in their perusal, when once he begins.

"The work is interspersed with model sets of rules, tables, Acts of Parliament, and numerous statistics—making it in every way what it professes to be, an Encyclopædic Treatise on Associations for Provident Investment. . . .

"Whatever settlement is come to on this question" [of Savings Banks, Division I.], "the State will be much indebted to Mr. SCRATCHLEY for the service he has rendered in clearing away the public misconception which on this, as on many other subjects, has stood in the way of real progress."

3.—From the "WESTMINSTER REVIEW," January, 1861.

"Mr. SCRATCHLEY, who may be looked upon as the standard author on such subjects, has collected into two volumes his various works on the investments of the poorer classes; and, by doing so, has brought together an amount of information that can hardly be with safety neglected by the directors or members of these important and beneficial enterprises. A twenty years' experience as a practical adviser on the subject, and an extended correspondence with every country in which these institutions have taken any root, has put him in a position to speak with authority on all points connected with them. His first volume is exclusively devoted to the subject of *Savings Banks*, and contains a most full review of their history, of the errors which in past times have infected their constitution, of the sad frauds which have so greatly interfered with their popularity and usefulness, as well as a full system of rules by which their recurrence may be avoided. The minute detail into which he pursues his subject leaves little to desire. His rare industry and laborious application alone could have brought together so exhaustive a collection of every fact worthy of being known on these important subjects.

"The various projects of Government supervision and guarantee which have been suggested to obviate such lamentable frauds as those which gave an evil fame to the Cuffe Street and Rochdale Savings Banks, are discussed with great discrimination. . . . It is greatly to be hoped that the reviving confidence of the working classes in these institutions may not again meet with such severe checks. Few things, we are sure, will tend more unequivocally to this result than a general acquaintance with the warning contained in this valuable Treatise.

"The same breadth of information and minute acquaintance with the subject characterise Mr. SCRATCHLEY's *Treatise on Building Societies*. . . . These volumes abound in valuable statistical and working tables, which of themselves would entitle them to a place on the committee-table of every Benefit Society and Savings Bank."

4.—From the "LONDON QUARTERLY REVIEW," October, 1860.

"The subjects discussed are of great importance in our very complex condition of society, and the author deserves the thanks of the public for his luminous statements and judicious suggestions. The remarks on the moral urgency of life assurance ought to be seriously perused by our young men, by fathers of families, and, in fact, by all whose family incomes are dependent upon the life and health of an individual. The work ought to be found on the shelves of every educational institution and reading room."

5.—From "L'ETUDE SUR LES CAISSES D'EPARGNE," by M. Auguste Visschers, Membre du Conseil des Mines, Belgique.

"D'un seul mot, nous pouvons, pour compléter notre pensée, renvoyer le lecteur au remarquable ouvrage de M. SCRATCHLEY. On y trouvera, entre autres, l'analyse de l'enquête ouverte, en 1858, devant un comité de la Chambre des Communes (pp. 17 et suiv.); l'histoire des fraudes commises, de 1848 à 1851, dans les caisses d'épargne Anglaises (pp. 49 et suiv.); les remèdes proposés (pp. 76 et suiv.); les améliorations à apporter dans le régime intérieur des caisses d'épargne (pp. 90 et suiv.); un examen des causes qui ont produit le déficit actuel dans les fonds des caisses d'épargne d'Angleterre (pp. 115 et suiv.); un plan de réorganisation financière de ces institutions (pp. 165 et suiv.); l'exposé du projet tendant à utiliser les bureaux de poste comme auxiliaires des caisses d'épargne (pp. 215 et suiv.); l'examen du système de banques de dépôt, ou de caisses d'épargne indépendantes en dehors de la garantie du Gouvernement (pp. 264 et suiv.); enfin, l'exposé et la discussion du projet de M. Gladstone, en 1860 (pp. 295 et suiv.)."

6.—From Article on Building Societies in "HOUSEHOLD WORDS," November, 1851.

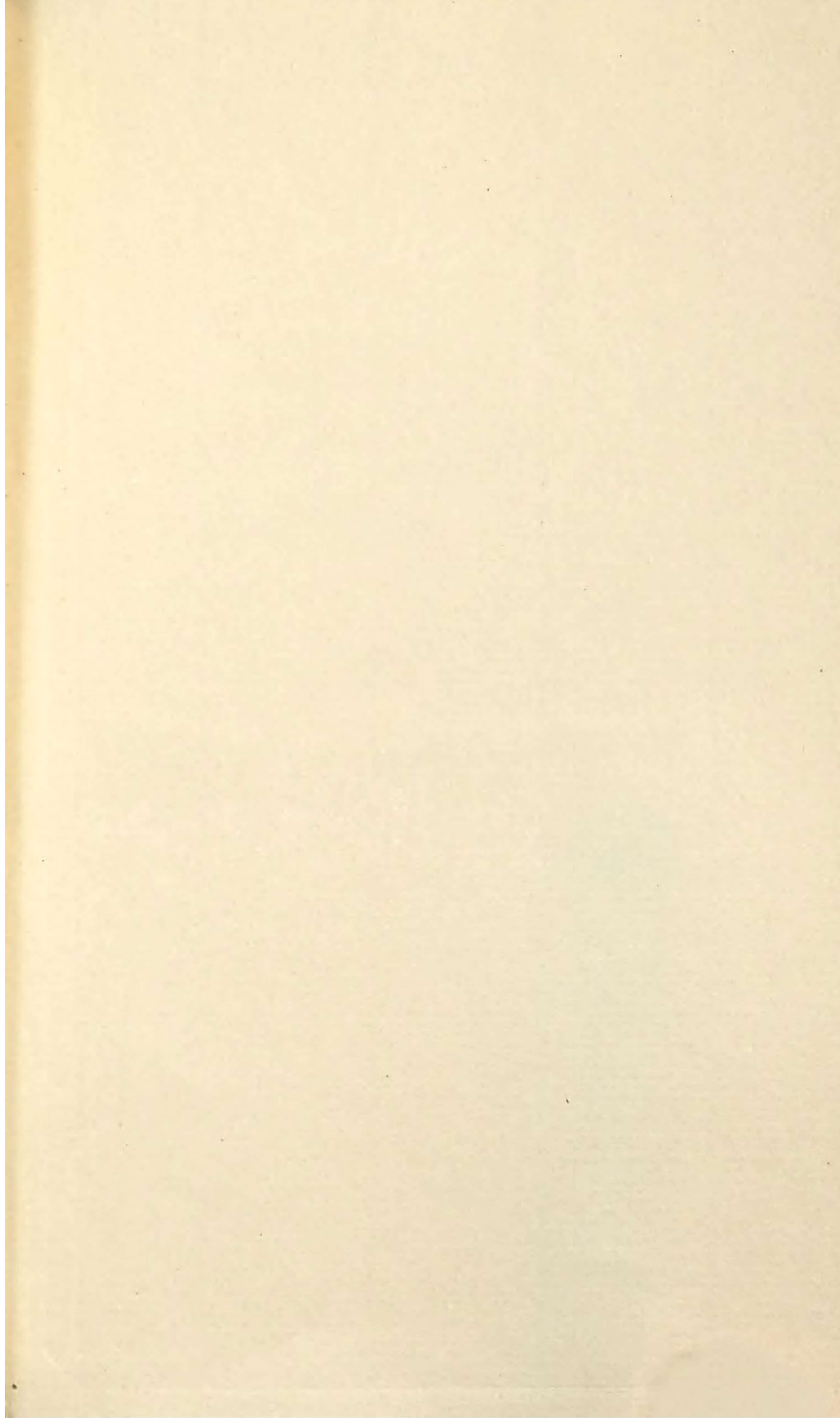
"For the descriptions we have been able to give, we are indebted to the perusal of two books, published in the present year, which we urge upon the study of all those to whom is entrusted the responsibility of taking active part in the formation or management of Building and Land Societies. . . . For the Finance, and all the minute details which go to the full practical understanding and management of these undertakings; for a distinct marking of the rocks and shoals that lie in the projector's way, and for the tracing of his proper track, we refer the reader to the new edition, now published, of a work on '*Industrial Investment and Emigration*,' by Mr. SCRATCHLEY."

7.—From the "EDINBURGH REVIEW," April, 1852.

"It is obvious that the desirableness of *Industrial Societies* as a mode of investment for the humble classes, must depend entirely upon the soundness of the principles upon which they are based, and the strictness with which these principles are adhered to in the management. Much money has, no doubt, been lost and spirited away in these undertakings, and none should be trusted by the poor that are not duly certified and registered. But, when this precaution is observed, we believe they deserve the encouragement and favour they have received. Mr. SCRATCHLEY's work is a careful exposition of the rules which should guide their constitution and management, drawn up by a competent and experienced man."

8.—From the "JOURNAL DES ECONOMISTES," April, 1861.

"M. SCRATCHLEY a publié, sur les institutions de prévoyance, un ouvrage qui a fait une véritable sensation de l'autre côté du détroit. Chacun sait bien, dans ce pays où l'actif des caisses d'épargne s'élève à plus de 900 millions, et celui des *Friendly Societies* à près de 300, la compétence toute particulière de M. SCRATCHLEY."



Scratchley, Arthur

Treatise on Friendly Societies Containing An Exposition of the True Law of
Sickness, With Rules and Tables

London 1859

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